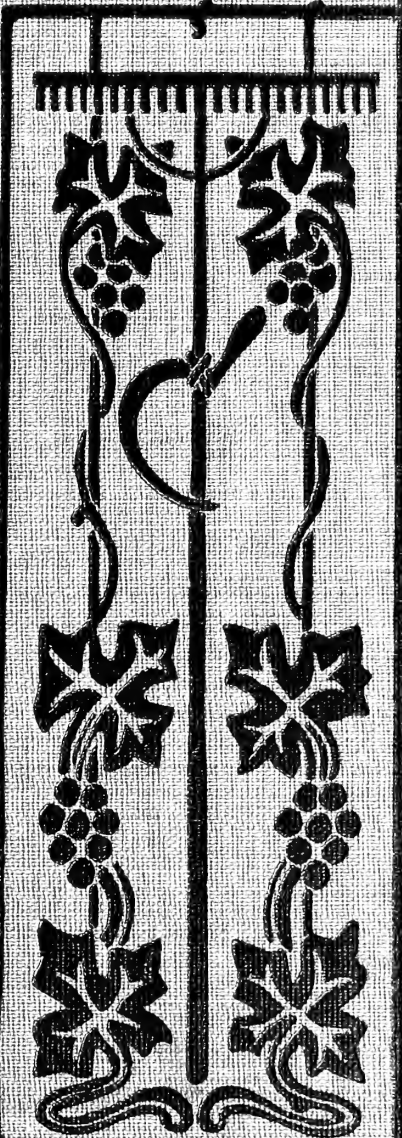
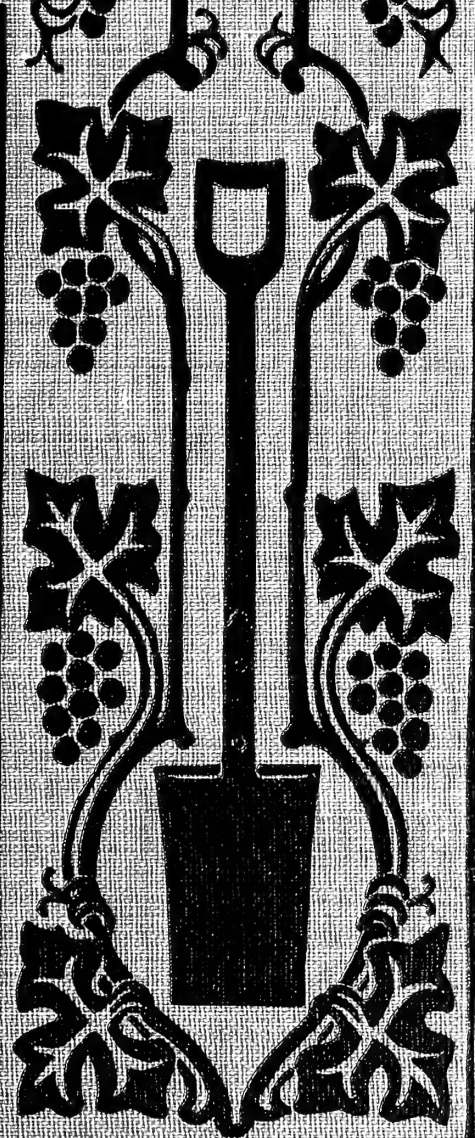
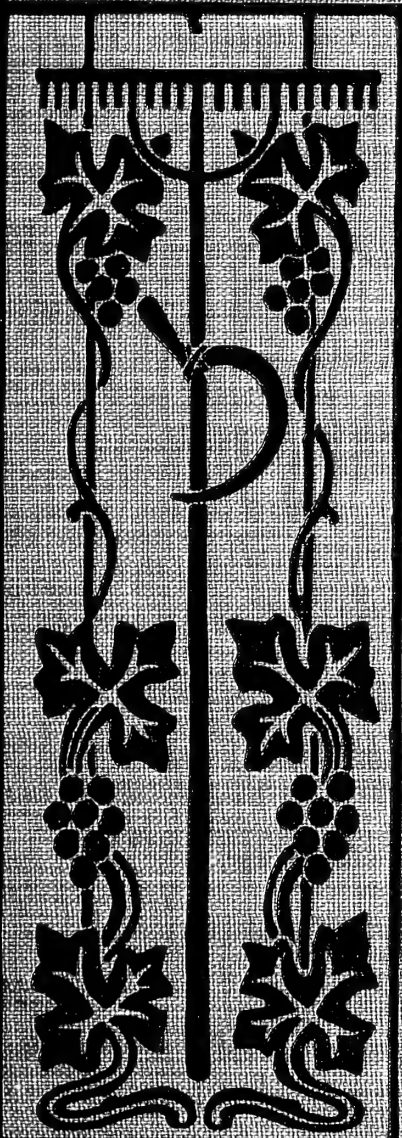
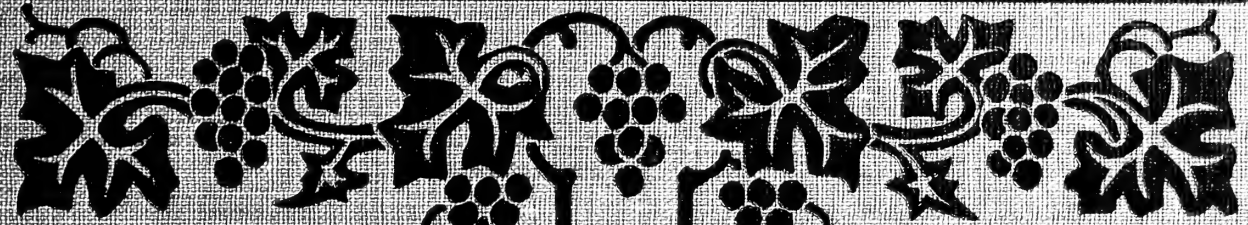
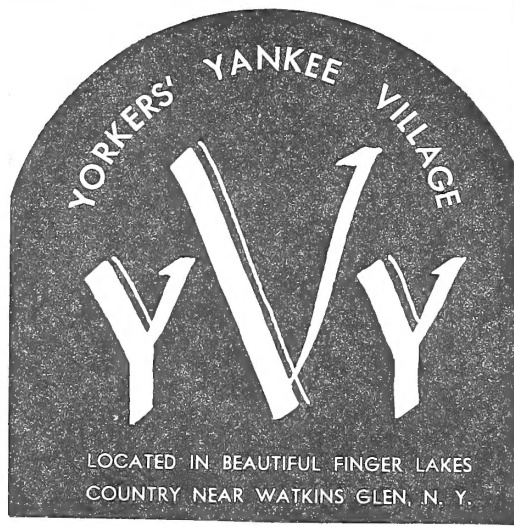


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and to the Cultivation of Fruits, Vegetables and Flowers*

Volume XXVI

August, 1917, to January, 1918



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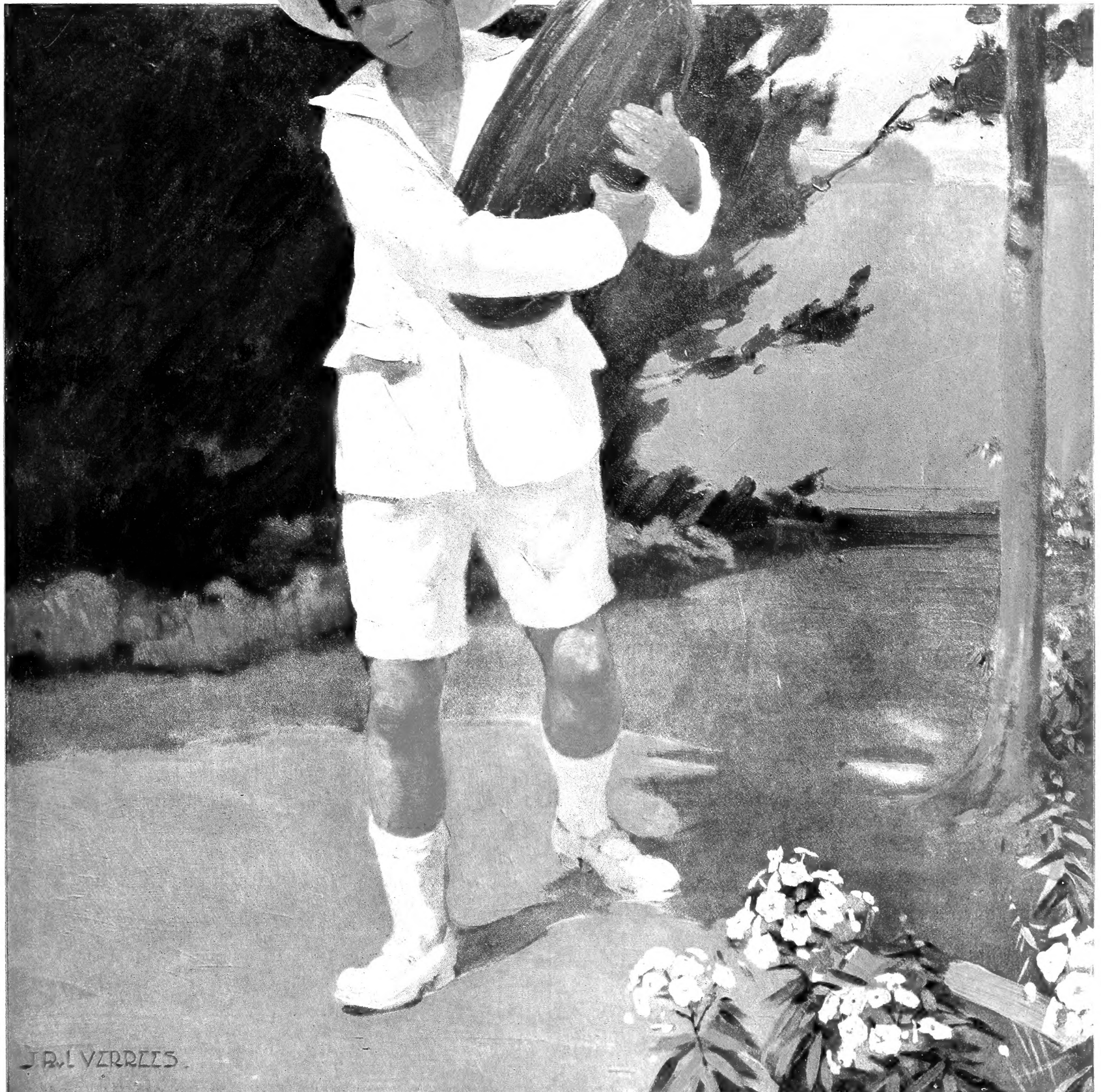
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The GARDEN MAGAZINE

August 1917

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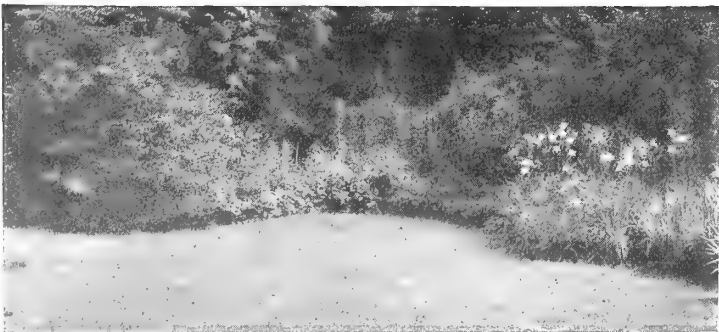
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THE GARDEN MAGAZINE

AUGUST 1917

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LEONARD BARRON, EDITOR



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GARDEN CITY, N. Y.

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Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879



So keen was one of our Hartford friends for a greenhouse, that he built it and the sunroom first and joined his residence to them.

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Linking Them To Your Home

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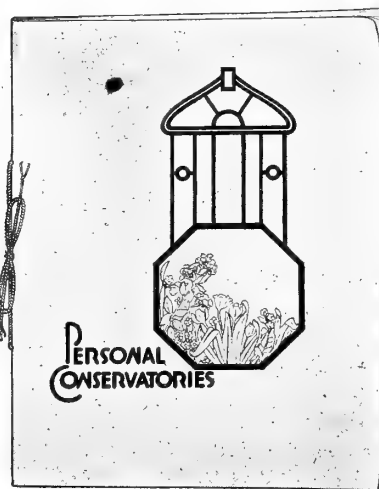
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The Garden Magazine

VOLUME XXV

AUGUST, 1917

NUMBER 1



AMONG OUR GARDEN NEIGHBORS

Did the Darwin Tulip Disappoint?—Are there any GARDEN MAGAZINE readers, others than myself, who have been particularly disappointed in their Darwin Tulips this year?

A large proportion of bulbs in my beds, in some amounting to nearly half, sent up a flourishing bunch of leaves but no flowers. This trouble was not confined to the older beds, but all seemed to be affected more or less without regard to age. Several other Tulip raisers in this section report the same trouble, and as none of them can give an explanation, I wish some fellow reader would enlighten me as to the cause and the remedy, if there is a remedy. Is it due to the peculiar season or to some disease which has attacked the bulbs, and will they probably flower all right next year? Am a great lover of tulips but an amateur at the business of raising them, and any advice would be gratefully received.—*Ernest C. Exford, Pittsfield, Mass.*

[No disappointment with us, indeed! Perhaps the bulbs you received had suffered in transit. If, as did happen to some cargoes last fall, they were delayed and heated on shipboard that would account for the failure to bloom.—*Ed.*]

Why So Few Currants?—A few years ago we purchased for garden purposes a small plot of ground that had been in garden for several years. A row of currant bushes was growing along one side. We debated whether to dig them up and decided to let them grow another year as "we were all fond of currant jelly." That summer raspberries and blackberries were scarce and high-priced and we turned to our currants to supply us with fresh fruit. We did not expect to relish them especially, but to our surprise found them very appetizing, particularly for breakfast, having as they do the tartness which the general use of oranges and grapefruit has demonstrated the morning appetite craves. The bushes bore for more than a month and during that time currants were on our breakfast table each morning. The more we ate of them the better we liked them. It was with real regret that the last were picked.

That fall in discussing garden plans instead of debating whether to grub out the currants we decided to give them particular attention. A horticulturist was hired to prune them and on his advice the following year we sprayed them early in the spring with arsenate of lead,

and easier to handle than any other small fruit. That season they yielded more abundantly and the currants were nearly half again as large as they had been the previous year. Needless to say we relished them for table use even more than we had the first season. Besides eating them as a fruit we put up jelly and dined off currant pies and currant sherbet. The latter, to our notion, is one of the most

and easier to handle than any other small fruit.

Since out interest in currants has become active a friend who operates a fruit farm in western New York has written me that he received \$700 last year for the fruit from an acre of currants. So, it would seem, that growing currants for the market is no less advisable than growing them for home consumption.—*F. L. Clark, Iowa.*

Food Conservation Our Duty

On another page of this issue Mr. Carl Vrooman, Ass't. Secretary of Agriculture, appeals directly to THE GARDEN MAGAZINE readers to use their every energy at this time toward the conservation of the crops now growing in the gardens of the people.

It is conceded that the Garden Neighbors rallied nobly to the earlier appeals to increase food crop production this year. THE GARDEN MAGAZINE readers responded not alone in working their own gardens to best efficiency, but also in stimulating others and in assuming their proper burden of responsibility in organized local efforts.

But there remains the problem of cashing-in. The crops have been grown—they must be conserved. Methods of distribution must be devised so as to reduce to the minimum any waste of product. Herein lies the opportunity for every Neighbor.

And, further, write at once to Mr. Herbert Hoover, Food Administration, Washington, D. C., and enroll as an active member in the "United States Food Administration" and so obligate yourself to take part in authorized neighborhood movements.

delicious of the frozen desserts. The bushes were in bearing fully five weeks. A feature which surprised us was the length of time the bunches held together and the fruit remained in good condition after apparently being dead ripe: There is almost no waste for this reason as it is seldom necessary to pick more any day than is needed for immediate use. Another thing, we decided that currants are easier to pick

Who Succeeds with Heather?—I note on page 174 of the April number what is said of the heather. I planted it here in two spots, high and low, and it browns in winter and dies back. I wrote to the Biltmore Nursery, from whom I obtained the plants, and was told that it thrived there, and only needed sun and air. My location gives both, exposure West—good soil well drained. Near by I have *Biota nana* and *Retinospora obtusa* which thrive. Any advice you can give me will be appreciated.

In reference to broad-leaved evergreens it seems that *Ilex glabra* and *crenata* are of very slow growth here. *Evonymus japonicus* does well in northern exposure, same for *Rhododendrons* and *Mahonia*.—*Jos. L. Wood, Va.*

[Heather is essentially at home in northern regions or what amounts to the same thing, high elevations in more southerly places. It likes cool, light, well-drained soils with plenty of water, too. Can any Neighbors help our friend?—*Ed.*]

Spanish and German Iris From Seed.—In THE GARDEN MAGAZINE, for June, Miss Sturtevant, speaking of Iris from seed says: "They do not ordinarily produce seeds unless crossed by hand." I have several seed pods on mine now (varieties like *Madame Chereau*, *Queen of May*, etc.) which I will save and try her plan. She may mean that the variety does not change unless fertilized by hand, however, I shall watch mine with interest. [It could hardly be expected that varieties would come true from seed in any case, and more especially since the pollination must have been accomplished by some outside agency.—*Ed.*]

I have a wonderful bed of Spanish Iris, next to a Pansy bed. Last fall I noticed some "wiry looking things" coming up among the Pansies. I first thought they were a good crop of wild onions and was about to uproot them when, on comparing them with the young growth of Spanish Iris, I decided they

were seedlings. I left them, they have just bloomed and are all like the dark blue Iris in adjoining bed. I don't see how they have come there unless the seeds were blown by the wind. I have often noticed the seed pods, but never thought of saving the seed. [Iris xiphium is very variable in color, but is perhaps normally blue-purple.—Ed.] I have no trouble in keeping a healthy lot of dark blue Spanish Iris, though many complain of its being short lived. I have several other colors which disappear after a year or two, except one clump, a bright yellow, that has multiplied in three years. There is a well defined variety or sub-species of Spanish Iris that has yellow flowers.—Ed.] They are great favorites of mine and I would like to be as successful with the other colors as with the blue. Could there be a difference in the variety? English Iris will last several years but finally disappears. I have so much trouble with moles, I often wonder if they have anything to do with the disappearance of the Iris.

I plant Asters in between Spanish Iris after its season is over, and so far it has done no harm. The Asters last such a short time, they are out of the way by the time the Iris makes its fall growth. Next to the bed of Iris are Shirley Poppies, the rich blue of Iris blooming at the same time as the Poppies makes this a bright spot in my garden, perhaps too bright for those who care only for pink, blues, and lavenders. Behind the Poppies I have a large clump of blue Larkspurs, so after the Iris has gone I still have my combination of blue and red; and with white Sweet Williams in the foreground, I have a "patriotic corner" and I thoroughly enjoy "showing my colors."—Bland U. Tomlinson, Tennessee.

We Love Our Cottontails and prefer to protect all young trees and shrubs, rather than kill the rabbits. Six inch collars made of several thicknesses of newspaper, tied firmly to the small trunks of the trees, and the earth then "hilled" up to cover the bottom of these collars, have proved successful in keeping my small trees quite safe from girdling.—L. M., Ohio.

Magnolia Salicifolia.—The Willow-leaved Magnolia flowered in the parks here for the first time this spring. The flowers were partly open on April 28th and it was in full bloom on May 10th. The season was fully two weeks late and in ordinary conditions it would probably be in full bloom about April 25th. It blooms at the same time as Hall's (Magnolia stellata). The flowers are on short stalks not more than half an inch in length. The six petals are white to cream white, and the sepals greenish white. The flowers before expanding are tubular in outline, and

when fully expanded are from four to four and a half inches across. The flowers are not as showy as the blossoms of the Chinese hybrid Magnolias, but as this species comes into bloom earlier it is therefore of much interest.

The leaves are ovate-lanceolate in outline, acuminate at the apex, and wedge-shaped at the base, yellow-green above, pale and smooth beneath, and four to five inches long on young shoots, and pungently fragrant when bruised. The branching habit is distinctly upright,



Flowers of the new Japanese Willow-leaved Magnolia (*M. salicifolia*) photographed at Rochester N. Y. Normally it blooms with Hall's Magnolia and is welcome because of its large bloom

and it is quite distinctive in this from any other Magnolia, making an oblong compact head. The young branches are olive green, and the trunk and old stems are covered with smooth green bark. Magnolia salicifolia is a native of Japan, and is a most interesting and valuable addition to our parks and gardens. The individual that flowered with us is eight feet high.—John Dunbar, Rochester, N. Y.

"All to the Good."—It seems to be the fashion just now to express one's opinion of the Magazine so may I lay my little tribute at your feet? I find an immense deal of information in the articles by "Professionals" that appear from time to time, and, unlike Mr. Chamberlain of New York, I think the Magazine might die if it did not have them—to me they are the

cream of the contents; but I also enjoy the little bits by amateurs. In fact the Magazine is so good that I cannot see how any one can have anything but unstinted praise for it.—M. E. Blacklock, Ontario, Can.

[Nevertheless we hope to improve constantly with the help and advice of our readers.—Ed.]

Out of Season Transplanting.—I think that C. L. Meller did not go into detail enough in his article on Transplanting out of Season. This is the way I proceed: Late last spring I found that two small beds of Canterbury Bells were in great need of thinning out. The plants were already a foot or more high and ought not to be sacrificed, either by pulling out or allowing to crowd one another. So I found two round-pointed farm shovels, thrust one deep under a plant and the other to a little more than the same depth into the place where the plant was to go. Then I traded the shovelfuls. The process was repeated at a very rapid rate. Not a plant suffered. One or two drooped a little, but watering quickly restored them. When I was through I had still two beds of undisturbed plants and had gained a long row across a fifty-foot garden. At this writing, July 3, all are bursting into scores of flowers, the transplanted ones fully as good as the others.—John W. Chamberlin.

Flowers Every Month.—If there is any one thing that Cleveland cannot boast of it surely is her climate in the winter. It is raw cold, windy, and sometimes for weeks at a time we hardly see the sun. But notwithstanding all this, I have for many years been able to pick flowers from my garden every month in the year. I have to confess that this January was so cold that I found no flowers, or rather that no one else did—for I was not in the garden during that month. My last garden flowers were the little Pompon Chrysanthemums, and "Johnny-jump-ups" picked December eighth, and the Paper White Narcissus had been in bloom in the house quite three weeks before. This is the first time that I have ever made my spring flowering bulbs, and the fall flowers in the garden lap by. While the Paper Whites were still going in January, the Freesias began. They lasted a full month, and then with them and always lapping over a little, came the Roman Hyacinths, the real Daffodils, the Dutch Hyacinths, blue Scillas. On the twentieth of February we found our first Snowdrops, and since then there have always been a few flowers in the garden. For almost a month the Snowdrops had it to themselves, but then came Crocuses and blue Scillas as well.

About the middle of January we are likely

to have a few mild days, and it is then that I look to find on the north side of the house a few brave Snowdrops which somehow give me a thrill of joy that the later flowers can hardly bring. So you see that within and without I manage to have flowers in my garden every month in the year. When I have been forehanded enough to have Pansy plants in the coldframes, I have often picked a Pansy an each of those barren winter months about which Louise Beebe Wilder has written with so much feeling. At the present writing (March 23), the *Arabis alpina* which is planted with the *Scilla sibirica* is well budded, and soon there will be a wonderful bed of clear blue and white.

I had a curious experience with my *Arabis* two years ago. According to all the authorities, late summer or early fall is the time to separate these plants, to increase their number. Early in the spring I set an old dorky to uncovering the bed, cautioning him to do it only with his hands, explaining that every little circle of green leaves contained the buds and it must not be broken; the greatest care must be used.

The moment my back was turned he clawed over the bed with an iron rake, and as a result some seventy-five heads that had braved the winter's cold were ruthlessly snapped off. I was disconsolate, almost to tears, but moved by what I know not, I knelt down and one by one pressed each rootless little stem with its whorl of leaves in the ground, not really thinking they could live, but just because I was sorry for them to be cut off just before their blooming time. Imagine my surprise some two or three weeks later to find practically every one of them had taken root and they blossomed and have greatly added to the size of my bed.—*Nellie D. Merrill, Ohio.*

When a Teaspoon Solves Difficulties.—When the weather at last permits the transplanting of early grown seedlings to their outdoor situation, there is apt to be a large loss from the handling, as well as a set-back to those that survive. The seedlings are often quite close together in the box, and to dig out one without bruising or breaking some of its neighbors is difficult or impossible; and the plant which is being moved is, also, often injured by the old earth falling away from its roots, this making the shock of transplantation very severe. The use of a flat blade, like that of a knife, generally loosens the earth about the root: a small trowel is not much better, besides almost certainly crushing nearby plants by its broad, long blade. If a kitchen teaspoon be used for these tiny seedlings, it will be found very easy indeed to scoop out each plant with the earth around its root not even loosened, and to place it in a hole already scooped in the outdoor flower bed to receive it, where it will grow as if nothing had happened to it. The fact that the bowl of the spoon is curved in two directions instead of in only one, as the trowel is, makes it easy to get well under the plant, and helps to hold the ball of earth around the roots together. The short bowl and narrow handle of the spoon makes it practicable to avoid the surrounding plants.

With a teaspoon a first transplanting of seedlings sown broadcast can be nicely done in the house before the spring shift to outdoors.

With many larger plants, transplanting is equally facilitated by the substitution of a larger kitchen spoon for the usual straight-backed trowel. For instance, poppies, which are said to be almost non-transplantable, have been moved by this means, and very few plants lost.—*W. J. Whiting, Conn.*

Marsh Marigold as a House Plant.—Many of our native plants bloom well in pots in the window or on the piazza in summer, or in the window box in early spring, but for a goodly show of blossoms and foliage from little care I suggest the Marsh Marigold (*Caltha palustris*). The treatment is simplicity itself. One or more roots may be lifted from the brook-bed as soon as enough growth has been made in early March to show their location, and placed in any kind of a dish with a little of the brook mud or garden soil, and plenty of water. I prefer about five roots in a six-inch pot, to get a good clump, and the mud in the pot is covered with Marsh Forget-me-not (*Myosotis palustris*) which will give an undergrowth of fresh green shoots, and flowers after the Marsh Marigold has dropped its blossoms.

The pot is set in a deep dish holding at least a quart of water, and set in any window—it is not necessary to have any sun. The room need not even be heated, and it does the plant no harm to freeze, the dish is more liable to be injured. Within three days the big round leaves will push out, the buds show in two weeks' time, and the waxy yellow blossoms on stems a foot tall are fully expanded inside of three weeks from the time you bring the plant within doors. If the plant is kept in a cool room the blossoms are effective for three weeks, so large and shining that friends think it must be some rare plant from the tropics, and not our friend of the swamps a month later.

When the flowers have fallen and the foliage gets limp slip the plant out of the pot and into the brook again or in the shady part of the vegetable garden, where it may be forgotten until the first thaw of the next spring, when the roots may be potted and brought into the family again. I imagine that the double-flowered form would give even brighter and more enduring blossoms.—*S. F. H., Lexington, Mass.*

THE MONTH'S REMINDER

THIS YEAR'S LAST FOOD PLANTINGS—BUILDING FERTILITY FOR NEXT—SETTING OUT EVERGREENS

DON'T fool yourself; for there's work to be done! Anybody knows that one of these piping afternoons, when the thermometer is threatening to run over at the top, and sidewalk and paths are so hot that your bare-footed boy has to walk on the grass, it is much more comfortable in the couch hammock, with the last volume of Kipling or the new issue of the *World's Work*, than it is out in the garden shoving a wheel hoe or destroying weeds. But—think of the boys in the trenches—and also of the price you paid for potatoes last winter! And did you ever notice that the man who has been out playing golf or tennis all afternoon has a good deal less complaint to make about the terrific humidity than the one who has been hugging the shady side of the veranda, and imbibing iced drinks? There's a considerable stretch every afternoon, say from four o'clock till dark, when it's fairly comfortable in the garden—next year we will have "daylight saving" in force. And as to other objections:

(1) If your garden is clean, half an hour's work a day with the wheel hoe or slide hoe will keep it so, while if you let it go it will take

hours of the hardest kind of work to get it back into shape, if you find it possible to do so at all.

(2) If crops have "gone by," it is the worst kind of gardening to let them remain, inviting weeds to mature and seed themselves, and using up plant-food and moisture that should be utilized for a succession crop, or for a cover crop for winter to be spaded under next spring, supplying your hungry garden with humus and stored up plant food for big crops next season.

(3) As to the argument that you have to leave the big weeds, because they cannot be pulled out without taking other things along with them—don't pull them out! But don't leave them to work havoc where they are. Sharpen up your knife, or if there are many of them your lawn edger, and cut them out. Cut through the roots, just below the ground.

Last Call for Planting!

THIS is about the last call for planting food crops to be used this year. A number of things can be put in yet, if you plan at once, and take pains to do everything you can to assure good germination. These include: beans, beets, carrots, Chinese cabbage, corn

salad, cress, lettuce, peas, radish, sorrel, spinach, swiss chard and turnips. In making these late sowings you should of course use early varieties which will mature in the shortest time. Most of the foregoing require about eight weeks to be big enough for use, but the root crops will continue growing until hard freezing weather. *If you take full advantage of the opportunity* that is likely to occur, and make this planting immediately after a good rain, it will be possible to have most of the vegetables up in three or four days after sowing. *But don't wait indefinitely for a rain;* and have your ground spaded and ready to absorb every drop that falls, if you are going to wait at all. If the dry weather doesn't let up, open up trenches before planting and flood them with water; then fill in a little soil on top of the mud, and plant on this, pressing the seed down firmly. Soaking the seed a day or so before planting will also help to make certain of good germination in dry weather.

Start Plants for Later Use Under Glass

WHEN your planting of outside crops is attended to, don't forget that you will be needing good strong plants with which to plant

your frames and the benches in greenhouses for fall and winter use. A large number of plants for this purpose may be started in a very small space. If you haven't an empty frame, and your garden is not accessible to water, take a few square feet in one of the flower beds. If the soil is very dry, first of all water it thoroughly two or three times in succession; then fork it up and make it smooth, adding humus or sifted leaf mould if it is not already loose and friable. Mark off shallow furrows six inches to a foot apart, and after sowing the seeds, and *marking each row carefully*, cover the whole with a shading of cheesecloth or some similar light material. The little seedlings should be thinned out or transplanted as soon as they begin to crowd.

The New Strawberry Bed

KEEP in mind that the size of your berry crop next June will depend upon the growth made by the plants before freezing weather this fall. If you planted last April, or if you are planning to set out potted plants this month, everything possible should be done to get the crowns as well developed as possible before that time. Continuous cultivation, and an extra side dressing of nitrate of soda and wood ashes or a good garden fertilizer should be on the programme of their care for this month, if the bed is already planted. If you are going to use the matted row system, see to it that the strongest runners are rooted *where you want them*, and the secondary and surplus runners cut off. Very few gardeners seem to fully realize how certainly crowded rows are to mean small berries.

If you are setting new plants now, study carefully the article on page 20. It is highly important to provide a liberal amount of nitrogen in available form. Sheep manure, chicken manure or tankage, mixed with fine ground bone, will accomplish this. Commercial mixed fertilizers need handling with care as there is danger of injuring the roots with them. A sprinkling of wood ashes, either with the materials suggested above, which should, of course, be thoroughly mixed with the soil before the plants are set—or applied along the rows two or three weeks later, will also be very helpful.

Now for the Evergreens!

NOW is the time for evergreens, and you have the place—unless your grounds are the exception to the general rule! Have you been waiting for years, and envying your friends with attractive groupings or plantings of these beautiful trees? You may have been excusing yourself with the thought that you could not afford them; the real reason however has been that you never *acted on your impulse and sent in an order* for a few! Don't let the time slip by and the opportunity be gone for another year! Send in your order this week and be ready to plant just when they should go in.

Thin Now for Fat Fruits Later

MANY home gardeners, who take very good care of their trees and spray them regularly, wonder why they cannot grow such fine specimens of fruit as they are able to buy. One of the chief reasons is that they cannot bring themselves to the point of picking off numbers of good looking peaches or apples or plums before they get ripe, in order that those remaining may be better. It is about as hard to get them to do this, as it is to get a beginner at Rose gardening to cut back her cherished bushes almost to the ground the first spring after she has set them out—

she may believe it ought to be done, "but simply hasn't the heart to do it!" Well, you can take your choice; over-crowded trees and poor fruit, or properly thinned trees and excellent fruit—and there will be as *much* (bulk) of the latter as of the former. Twenty to fifty per cent. of the fruits on overburdened trees should be removed; the sooner the better when the natural "drops" are off. It is much more likely that not enough, rather than too much, will be taken.

Bag Your Grapes!

HAVE you ever had your grapes set so that every bunch was as full as it could possibly be; and grow as nicely as you could possibly ask, and then, just before they were ready to eat, begin to "go bad," until, by the time they were ripe, there was hardly one you could eat? Have you. Well, don't have that experience again this year. It's up to you! The surest and simplest way of protecting the bunches on a few vines for home use is to put a paper bag over each bunch. Special bags,

DO THIS MONTH

Without delay, make *last plantings* of succession crops.
Start lettuce, cauliflower, pansies, stocks, and other *vegetables and flowers for fall and winter* under glass.
Set out new *strawberry* beds.
Plant *evergreens*.
Plant *Madonna Lilies* as soon as received.
Transplant and divide *Irises, Oriental Poppy*, and many other perennials.
Thin out *fruits* that have set thickly.
Sow *alfalfa*.
Sow *cover crops* wherever possible.
Keep *July planted* crops growing fast.
Bag your *grapes* to protect from rot.
Order materials for new *hotbeds or cold frames*.
Order *bulbs of all kinds* for fall planting.
Prepare beds and borders for *fall planting*.
Get ready for *exhibits* at vegetable and flower shows.
Build a greenhouse for use this fall to increase your food crop efficiency. This is important.
Keep the garden clean!

made for the purpose with wire fasteners, may be bought at about half-a-cent apiece. Ordinary paper bags will do; but the others are more convenient.

Good Gardens in Spite of the War!

IT IS always well to sow cover crops to save plant food, and to furnish humus for the garden; but this season, in view of the fact that there will be the greatest scarcity of fertilizing materials next spring that we have ever had, makes it ten times as important for every gardener to do all he can to protect himself in this way. Have rye and vetch or crimson clover on hand with *which to seed down every square foot of your garden that would otherwise be bare through late fall and winter*. Crimson clover can be used as far north as New York; farther north it is safer to sow the vetch, though early sowing, with another crop, will help to carry it through the winter safely. It is not necessary to wait until your ground is bare. Rake up all available surfaces, between rows of growing crops, among tomatoes and pole beans, in the sweet corn, etc., etc., and sow the mixture thickly, so as to have a green mat by cold weather; the work of picking and removing the crops will not cause as much loss as waiting until two or three weeks later to put the cover crop in. Rye can be sown on any bare ground up to time of frost or slightly later.

Have You Any Use for Hay?

JUST about the middle of this month is the best time to sow alfalfa. If you have a cow or a horse—or even chickens—on the

place for which you have to provide feed, why not try a small sowing of this wonderfully productive plant this fall. If you have wood ashes, and your soil does not have surface water on it during the winter months, you should be able to succeed in making it grow; once established it will last longer than any similar crop you could put in, and will give you three or four cuttings for green food or for hay, where you are getting one or two from grass.

Are Your Irises Petering Out?

IRISES, like most of the other hardy perennials, after a few years become overcrowded, and use up the amounts of plant food in the soil in which they are growing, so that the flowers gradually become smaller, and the plants weaker. To offset this, the plants should be lifted and separated every few years (about every three years in the case of the Irises) so as to continue to have first class flowers. Lift the old clumps carefully, and keep them shaded from sun and wind with an old wet bag. Then fork up the soil and work in well rotted manure and bone dust, if it is desired to replant in the same situation. But do not put the whole clump back. Separate it into sections containing several of the thick fleshy roots, with a bulb or leaf crown attached, in the case of the German Iris; or cut into sections several inches square, in the case of the Japanese class. The extra divisions may be used for planting elsewhere, or to present to some flower-loving friend. The German Iris should be planted quite shallow—about as you find it growing when you go to take it up, with some of the roots almost on a level with the surface.

Speed Up the Late Planted Crops

THE success of both the seeds and the plants put in last month, winter cabbage, cauliflower, brussels sprouts, late sweet corn, root crops for storing, etc., will be determined by the growth they make this month. In addition to keeping them frequently cultivated and free from weeds, a little extra encouragement in the way of a side dressing with nitrate of soda or some other highly nitrogenous material, such as sheep manure or tankage, will help them to become well established, and lay the foundation for big results in September. Celery especially should be kept growing rapidly. It requires an abundance of water, and even if you can't water the whole garden give the celery plants enough to keep them from getting very thirsty, if you want to make sure of your supply of thick crisp stalks for Thanksgiving.

Don't Fall Down on Your Orders!

GET in your fall orders on time. Next month is planting time, and you should be just as busy now in planning what you are going to put in, and in getting off your orders for it, as you are in February or March in getting ready for your spring planting. First of all there are the fall bulbs—(it seems now that the Dutch stocks will arrive in due season). Are you familiar with the finest of the Darwin and Breeder Tulips, such as Dream, Remembrance, and Rev. H. Ewbank? If not, give yourself a surprise next spring! And the hardy Lilies—one of the most neglected, in proportion to their real value and permanency, of all the classes of hardy flowers. And if you've been putting off, spring after spring, the planting of those ornamental shrubs you decided years ago to get, now's your chance!

THE PATRIOTIC GARDEN

CROP CONSERVATION & DISTRIBUTION

He also Fights who helps a Fighter Fight (H-Hoover)

AT-LEAST-SAVE-SOME-OF-YOUR-WINTER-SUPPLY

MAKE-YOUR-GROUND-WORK-FOR-THE-FAMILY-&-NATION

Authorized Statement of the Assistant Secretary of Agriculture

THE home garden campaign of 1917 ought to go down in history as one of the most remarkable responses ever made by the American people to a request from their Government—the request to help win the War by growing food. But the mere growing of food is only part of the battle. There is no use planting foodstuffs if the planting is not followed up by intelligent cultivation and harvesting. There is no use harvesting food unless there is efficient handling and preserving of it. And there is no use expending energy on any of these things, unless there is efficient marketing.

I think that by now the American people, broadly speaking, understand pretty well how to plant gardens and how to cultivate them. They are beginning to learn how to can and dry foods for winter use, but they still have a lot to learn along this line. If they are to conserve the crops of this summer, they must *dry and can a thousand times more than hitherto*—and do it more effectively.

The marketing problem is the most difficult single problem of them all. There is no easy solution of it. The one suggestion which I would like to bring to the mind of every home

gardener at this time is this—that the elimination of the unnecessary or illegitimate middlemen is as vital to the winning of the War as is the planting of food; that there may be plenty of food in the country and yet the prices may be so high as to be prohibitive and productive of the most acute suffering; that there is the greatest need for practical coöperation on the part of producer and consumer to the end that food produced on the farm and garden or manufactured in the factory may reach the consumer by the most direct route. The neighborhood community store run on a strictly coöperative basis and for service alone is a long step toward a solution of these difficulties. We have such a neighborhood store in Washington, D. C., and its demonstrated success is a splendid sign of the times.

I hope to see community stores springing up everywhere throughout the United States, so that the produce of the farm and of the garden, the food of the factory and the mill may be distributed to the ultimate consumer for nearly the cost of distribution—and no unnecessary waste or profit in the process.

CARL VROOMAN.

Eleventh Hour Opportunity

NOW is practically the last chance for those who want to “do their bit” in boosting this year’s food supply. And everything is in the gardener’s favor—the soil is warm, mellow, full of fertility; occasional showers prevail; seeds sprout with a “pep”; plants grow with an energy to mature before Jack Frost arrives.

The only point to guard when making the August garden is to be sure that there is sufficient moisture in the ground for prompt germination of seeds, or to sustain the roots of transplants. Therefore, *as a matter of insurance*, water the drills or holes thoroughly, before putting seeds or plants into the ground.

Grow Your Own Fertility for Next Year

THE time to sow cover crops (which will put humus into the soil for next spring) is when the free-growing crops now standing and which will die with the first fall frost, are too big to be cultivated any longer. If the soil is very lacking in vegetable matter it will be a good plan to sow a mixture of several species of cover crop, so as to get the most possible in a given time. A good combination for the vegetable garden is buckwheat, rye, and crimson clover. The first will start even in hot weather but will be killed by early frost. In the meantime the others will have grown enough to catch the falling leaves of the buckwheat. The clover may die during the winter but the rye will prevent loss of the leaves and will live. Indeed, here is its chief

disadvantage: it may be allowed to live too long. It must be dug or plowed under when only a few inches high. In sowing, just scatter the seed broadcast among the plants immediately after the last cultivation. It

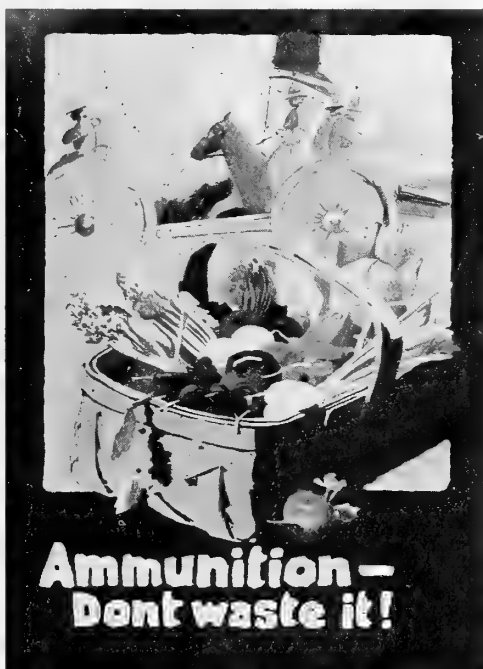
will not grow enough to injure the regular crops before harvest. Then the stems of these crops should be hauled to the compost pile and burned.

Thin the Ranks

ALL root crops sown this month must be given every chance to grow easily. Thinning of the row is the most effective factor in helping the final result. No other single factor will more decidedly retard development than letting seedlings stand crowded—they then jostle and push each other instead of attending to their own business of growing. Thin early; giving three to four inches apart for the plants left. This distance is standard for all root crops sown in August. Early thinning means early maturing.

Prepare Now for Bigger Crops in 1918

AS SOON as space becomes available in different parts of the garden, sow quick “cover crops,” such as rye or vetch or rape. They’ll keep down the weeds now, and—dug under in either late fall or spring—will enrich the soil with humus, that one dominant factor for fertility counting before all else that can be put into the soil. Make it a point to boost the 1918 berry crop by growing some berries of your own. Throughout August and September strawberry plants of various kinds may be set out and they will bear crops next summer. There should be room for currants, gooseberries and a strawberry bed in every kitchen garden.



**Ammunition—
Don't waste it!**

Timely and effective poster issued by the office of Food Administration. It tells the story convincingly

THE number of things that can still grow from seed to edible size is really surprising. Watch just two points: Sow the seeds promptly and *sow varieties adapted to the season*. This means quick-maturing types, and since the same weather conditions prevail during early fall as during early spring, in most cases, the *extra early spring sorts* will again serve their purpose.

Two kinds of gardens you can still have: (1) from seeds and (2) from plants. If you can, persuade your neighbors to let you have beet, lettuce, kohlrabi, or any other plants which they are now "thinning" from July planting. Most seed stores are prepared to supply plants of late celery and cabbage during the early part of the month. But if a garden from plants is out of the question, by all means start one with seeds and here is what you can grow:

Planting Orders for the Month

Beans. Where the first average frost does not occur until the last week in September, Bountiful or either of the Yellow Six Weeks Beans will produce pods from seeds sown up to August 10th. With September 21st as the frost date, depend on Hopkins' Strain of Round Podded Red Valentine to furnish pods in 48 to 52 days. But you *must* sow not later than August 5th (latitude of New York) or arrange to protect the plants. By placing rows eighteen inches apart, quite a space may be enclosed with bags or burlap. Thus protected, the approach of heavy frosts need not menace the late started beans.

Beets. Plant more rows at once. Not only do the young, "thinned out" seedlings furnish delicious greens, but varieties like Faust's Early Crimson (which is a white beet) and special strains of Crosby's Egyptian will form roots two to two and one-half inches in diameter by the end of September from seeds

YOU may expect a second crop of SLUGS ON THE PEAR foliage. If one appeared in your neighborhood during June, it will be due about the first week in August. We mean the ones that were green until full grown, then turned yellow when they shed their last skins before going into the ground to pupate. The flies from the first brood emerge in about two weeks, lay eggs on the leaf and die. The slugs of the second brood hatch in about two weeks and, if allowed, reach maturity in about four or five weeks. If not convenient to use arsenate of lead (which possibly you can't buy by the time this appears)—an ounce to two gallons of water—lime dust, pyrethrum powder or even road dust will make them uncomfortable enough to drop to the ground where if expectant chickens are at hand they will help reduce the H. C. L.

★ WORMY QUINCES are made so by the codling moth larva which also makes wormy apples. Spray with lime-sulphur wash (an ounce to two gallons of water) when the fruit is half grown. Of course, the spring spraying is more important. But it's now too late for that for this year!

★ THOSE little FLUTE-LIKE HOLES set close together on grape, raspberry and other canes that you perhaps saw late last summer, or until this spring, were made by the beautiful pale green or snow tree cricket which makes so much noise in shrubbery on warm summer evenings. Neither the adults nor the larvae

FOOD CROPS That You Can Sow Now

sown during the first week of this month. Be sure to press the seeds firmly into contact with the soil by walking over the rows. Though beets are really quite hardy and stand considerable frost, pull them for winter storage, before the centre leaves of the tops freeze, to ensure keeping quality.

Carrots. Both Chantenay and Oxheart will grow to good size if seeds are sown promptly early in the month and the seedlings are "thinned out" promptly. No other single factor will retard longer development than crowding in the row.

Other "root crops." Plant kohlrabi, radishes, and turnips. Early White or Purple Vienna kohlrabi are ready for use or storing in sixty days from date of sowing seeds. They stand considerable frost and may be left outdoors until the middle of October.

Radishes. The early sorts are again the order of the day. Scarlet Globe, Icicle, and Rapid Red will develop roots fit for use in 25 to 35 days and will retain their crispness for some time. Make no attempt to store these radishes since they are not of sufficiently solid texture to keep well. But by making repeated sowings of 15-foot rows during the first two weeks of the month, you may enjoy these delicacies up to hard frosts.

Turnips are one of the most profitable crops to sow now. Either of the Milan varieties or Snowball will reach edible size in 45 days. But for winter storage Purple-top Strap-leaf is better, since it is firmer. However, since it requires at least 65 days to reach good size, it must be sown very early in the month. It will grow right up to severe cold weather,

when it should be pulled and stored along with carrots, beets, and kohlrabi.

Kale and spinach are two cold-loving plants for "greens" that will thrive in the garden until after snow flies. Sow seeds in rows, which makes it ever so much easier to cultivate the crop, than the old-fashioned method of "broadcasting" the seeds. Dwarf German or Scotch Kale will develop superb plants by the end of October from seeds sown up to August 15th.

Spinach. Any kind, excepting New Zealand, will reach full size from seeds sown any time this month.

Peas. You may hope to gather luscious peas if you start with either Pedigree Extra Early, Market Surprise, or any other first early. Sown in double rows, four inches apart, with eighteen inches between the rows, Pedigree Extra Early needs no support, though Market Surprise will be better off if provided with brush or strings. The latter matured in 53 days this spring.

Lettuce thrives to perfection during the cool months of early fall. Either Black Seeded Tennisball, Wayhead, or Naumburger (among the butterheads) will form fine heads by the end of September from seeds sown early; among the crispheads, Crisp-as-Ice beats all for hardiness. We have seen this thrive outdoors, under a covering of dry leaves, right up to Thanksgiving. The thing of paramount importance in connection with lettuce is promptly thinning the seedlings to stand four inches apart when three to four inches tall and of taking out every other plant as soon as they begin to crowd in the row.

Directions as to time given in these columns apply generally to the latitude of New York as a standard. Except where specifically otherwise mentioned allow a difference of about a week earlier or later for each hundred miles south or north, as the case may be.

ENEMY ASSAULTS You Must Repulse

are troublesome because they eat plant lice and other insects. Their egg-laying habit weakens and injures the canes somewhat. If seriously abundant, cut off and burn the canes during winter or early spring.

★ IF THERE are only a few CABBAGE WORMS—the green velvety fellows—on your cabbage, cauliflower, and related plants, you needn't worry because their parasites will relieve you of their attentions. But if they are very numerous treat them to paris green (1 oz.) and whale oil soap (4 oz.), in water (6 gal.) any time up to the formation of the head. Hellebore one part by measure to three parts of flour, or lime dust is good to shake over the plants while still wet with dew. Some people use slug shot.

★ CABBAGE aphid or lice increase generation after generation all summer and fall. Better see if any of the little fellows are on the plants (cauliflower, brussels sprouts, etc.) this month as there will be many times more in a few weeks unless attended to now. "Black leaf 40" or other nicotine preparation such as aphine according to directions on the package but with two ounces of whale oil soap added to each three or four gallons of water may be used to good effect.

★ MELONS AND CUCUMBERS are very shallow rooted plants. They send their roots long distances laterally only a few inches below the surface and fully as far out from the "hill" as the vines extend. With this fact in mind the

method of handling them is obvious: use a scuffle hoe or a garden rake frequently but no deeper than the surface half inch of soil. Do this every week from the time the vines begin to "run" until they cover the ground, all the time keeping just out of touch with the vines themselves. The less the vines are touched or moved, the better, as they are then less likely to be injured or to become victims of disease and insects. Other things being equal this method will produce finer quality fruit than any other method. It is distinctly the home or amateur practise which the commercial melon grower cannot approach, much less equal.

★ BORERS IN APPLE TREES are of two principal kinds: the "flat-headed" which may be found in any part of the trunk and the main branches, which reaches maturity in one year and which feeds mainly just beneath the bark; and the "round-headed" which is usually found mostly near or just below the surface of the ground, lives three years, during the second in deep burrows though at first feeding in the sapwood and the inner bark, and lastly pupating just beneath the bark. Both species are very destructive especially to trees not kept clean around their trunks and to failing trees. Clean cultivation is a partial

and fairly satisfactory preventive, but cutting the worms out with a sharp knife or a chisel is a sure cure though in serious infestations a "kill or cure" remedy so far as the tree is concerned. After cutting, the wounds should be swabbed with concentrated lime-sulphur wash or with an alkaline wash made of soap, water, and caustic potash made into a creamy liquid. The trunks should be swabbed as far up as the lowest limbs or farther.

★ **BLACKBERRY AND RASPBERRY** plants die mysteriously, you say. No disease to be seen. Perhaps it's the raspberry root-borer. Notice whether the lower parts of the stems and the roots are bored out and if the new

shoots at the crown are girdled. A few plants will tell the story. Nothing to be done but to dig and burn the plants at once.

★ **BORERS IN THE QUINCE BUSHES!** Most likely the same as in the apple trunks and limbs. The same remedy will apply—dig them out and paint with concentrated lime sulphur wash or caustic potash and soap in a creamy solution.

★ **WHERE** radishes, mustard, cress, cabbage or other plants of the mustard family have been growing early in the season or last season use carrots, beets, celery, or some other crop of a different plant family. The mustard family is sub-

ject to a disease called "club root," which lives in the soil and often does serious damage when plants of the family follow each other closely.

★ **IF YOU** plan to save seeds of beans and peas for next year's planting, be sure to fumigate the shelled seed with carbon bisulphide to kill any weevils that may be present. These little beetles live over from year to year in the ripe seed, having developed from eggs laid in the green seed. The best way to fumigate is to place the seed in an air-tight receptacle not quite full, then to pour carbon bisulphide in a saucer placed on top of the seed and then to close the receptacle tight for two or three hours.

Cashing-In the War Gardens F. F. ROCKWELL

ORGANIZATIONS BEGUN TO SPEED UP PRODUCTION MUST NOW BE UTILIZED TO PREVENT WASTE OF THE PRODUCT—THE PROBLEM OF LOCAL OVER-PRODUCTION

EACH passing week seems to indicate more clearly that the war will finally terminate in a gigantic struggle for adequate food supplies; that the eventual issue will be settled by the field and garden. It was with a realization of this possibility that the "war garden" movement was given such an impetus in the early summer. Now the fruits of all the earnest endeavor which that agitation stimulated are begin-

ning to mature, and we find ourselves confronted with the equally important problem of utilizing them to the fullest possible extent. During the last few weeks, in connection with the work of establishing model demonstration "war gardens" in a number of the largest Eastern cities, I have had occasion to see literally thousands of back yard and vacant lot gardens. If I hadn't seen with my

own eyes I would not have found it possible to believe that such a very high percentage would be as well planted and as well cared for as they have been. Unlike most other "waves of popular enthusiasm," this garden movement seems to have had no recession; I believe, simply because it has given the people a chance to do what they really would have liked to do before. The vacant lot campaign and similar enterprises have merely

along finely, and a great deal more is going to be produced than it would have been reasonable to predict at the beginning.

Are We to Fall Down Then?

ALL this, in view of the present world food situation, is very cheering—except to those who from previous experience know what is likely to happen when nature has been generous in giving big crops!



Avoid waste by cooperative distribution Utilize existing organizations like the Garden Clubs, the Boy Scouts, etc

opened the door of opportunity to those who were waiting to push through! In the majority of cities, the number of plots available for general distribution were "over subscribed" almost as soon as announced. While some of these gardeners will drop out, nevertheless there is every indication that most of them are going to stick. The later plantings, in spite of the bad early season, are coming

Those who do know realize that the percentage of waste, especially in such things as perishable garden vegetables, usually is tremendous. Not infrequently it amounts to fifty or even seventy-five per cent. of individual crops! The small vegetable garden, in which from twenty to fifty per cent. of the stuff raised does not go to waste, is the exception to the general rule. To permit

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any such waste this year will be nothing short of criminal—and yet that is just what is bound to happen unless steps are taken in each individual community to do something beforehand to prevent it. *No Government Commission can do this work for us*—any more than it could have done the work of getting all these little gardens started. The Department of Agriculture is doing all it can in the way of educating people to utilize the surplus products of their gardens, just as it did in the spring in telling people how to plant.

Now, just as the work of planting had to be taken up and pushed as an emergency necessity by all kinds of local organizations and clubs, so the task of utilizing to the full the things that have been grown must be directed and handled in the same way.

Whether or not we are to cash-in at par on what our war gardens have produced, or to suffer a loss that is needless, and in the aggregate for the whole country tremendous, will depend upon the efforts of a few individuals in each community. Every reader of this magazine should immediately appoint himself or herself (and from what I have seen during the last few months, I know that the women are doing a very big half of the emergency garden work!) a committee of one to see to it immediately that the garden club food committee, Woman's Aid Committee, Chamber of Commerce, or whatever organization has had charge of the "food gardens" work in his or her locality, at once give careful consideration to the question of preventing waste.

First Aid to Wasteful Gardeners

THE waste almost universal in small gardens is generally due to the fact that the gardener does not know how to prevent it, or that the general overproduction of some particular vegetable is so great that it will really not pay to attempt to do anything. The latter reason is not likely to hold good this year. It is up to those in each community who *do know better* to attend to it and, through proper organization, see that nothing goes to waste merely because the grower lacks information as to how to conserve it. The efforts of individuals in this direction will be good as far as they go, but they will not go far enough. In the following paragraph there are four definite suggestions, one or more of which



Packages neatly put up will find a ready sale at all times, even during gluts

can be utilized to advantage in every city or town where extra gardens have been planted this year. Before taking up these suggestions in detail, however, emphasis must be laid on the importance of getting this work *started immediately*. Most gardens were planted late this year and will be at the height of their bearing season for the next few weeks. If we have hot, dry weather things will mature

and "go by" very quickly; therefore, every day counts. Immediate action now will save the day in *harvesting*, just as it did last spring in *planting*! Will the people rise to this occasion as they did to that?

In every town or city there should be at least one organization in a position to take up and push one or more of the following plans. But, as is always the case in such matters, *it will take a strong push by some individual to get the organization started*. So either do it yourself or keep after some one who can until something is started somewhere!

An Exchange for Every Group of War Gardens

THE spirit of coöperation and the idea of doing all that can be done to help and encourage the individual in gardening must not stop with the planting.

When there is one garden plot in which the owner has planted more beans than he can possibly use himself at one time, while fifty feet away, in another plot, there are heads of lettuce threatening to go to seed because the person growing them cannot eat them as fast as they mature; and, in a third, perhaps, radishes and turnips will have to be pulled out and thrown away if they are not soon made use of—under these conditions, certainly the common-sense, practical thing at hand is to establish *some agency for trade and exchange between the different plot owners*.

As to what would be the best way to arrange the details of this exchange will depend upon the conditions to be met in each particular place. Most of the war gardeners do their work in the evenings and on Saturday afternoons. A large table made out of plain inch boards, and supported by rough 2 x 4's on which to display produce for sale, is all the equipment really necessary. Some near-by merchant, however, will probably be only too glad to furnish one of the large advertising umbrellas, such as are used on open market and truck wagons, to afford some protection from rain and sun. It would not be necessary to have this "exchange" open for business more than a few hours a week; say, between five and six Tuesday and Thursday afternoons and from four to six on Saturday. The complications of delivery and a credit system should, of course, be avoided; those bringing the vegetables would state the price at which they were to be sold. In some places, it might be desirable to charge a slight commission, but, as a rule, this would probably not be necessary, as it should be possible to get volunteers to take charge of the exchange table for the few hours a week required. Either a credit slip or a receipt memorandum might be given for any of the vegetables brought in, but they would not be paid for until sold, as any that were not disposed of would be, of course, the grower's loss, just as though they had remained in his garden plot. There should be a simple set of rules covering the requirements as to whether the vegetables need be washed or not, limiting the amount any one could leave and so forth.

The main object of the exchange is to *prevent good vegetables from going to waste*! Whatever method in any particular case seems to be the best for accomplishing this purpose is the one to use.

Enlist the Boy Scouts for the Job!

ANOTHER "channel of distribution" available which could undoubtedly be used to advantage in many cases is through the boy scouts. They could be employed in connection with an exchange like that men-

tioned above, or without it. These boys have already done yeoman service in many ways with the war crisis, and a good part of their training has been that they have been led to realize that there are just as important things for them to do at home as if they were at the front. They have been of help in the production of food supplies, first in working gardens, later in policing others, and here they can be of assistance in the equally im-



As a patriotic gift or presentation basket surely good fresh vegetables will be quite welcome

portant work of distribution and preventing food waste. Their assistance here could consist in ascertaining where available surpluses existed, in taking orders and in delivery. The "organization" needed would be some central point, through which they could find out what vegetables were available and where they could be obtained. If the whole matter were in charge of a scout master, he could make it part of the boys' work for them to get this information for themselves.

A "Dry What You Can and Can What You Can't" Club!

THE lines suggested above are to prevent vegetables from going to waste in the garden. Equally important are the steps to be taken to prevent them from going to waste *in the home*. Your vacant lot garden club or other organization should arrange, first of all, for an educational campaign on the proper ways for saving for winter use all the surplus things that can be grown in the garden, or that can be bought cheaply. If it is possible, get up a meeting on drying or—dehydrating, and on canning of vegetables. If you do not know whom to get, ask your county agent or write to the readers' service of THE GARDEN MAGAZINE. A good lecture with demonstrations on this particular subject will usually "start things" a great deal more quickly than any number of leaflets or circulars. But such a talk, no matter how good or practical it may be, is only a start. This work should be taken up and pushed by a club started for the purpose, or by a committee of your local garden club. This committee should not be restricted to furnishing information or inspiration, it must actually work in wholesale purchasing of supplies. Such an organization could operate a community drying plant.

Work for the Red Cross Also

CANNING work can be carried farther than in helping out individuals. Some medium for exchange in canned garden products as well as for those fresh from the soil may well be established. The local Woman's Exchange would, in most cases, be the logical agency for doing this work. But there is another line of effort which would also be well worth looking into.

In working for the comfort of the men at the front, we are sometimes likely to forget the distress of the women who stay behind. In every Red Cross organization there are probably members who would rather than sew. Vegetables canned or dried now, and sold at cost next winter where they will be sorely needed,

will be just as much a contribution to the cause as will be the making of bandages for the front. In addition to this, there are the things which will be needed for the Red Cross Hospitals themselves, and which can be had better and cheaper if supplied by the members than if they were bought.

Personal Pointers for Conservation

IN ADDITION to these essential community activities, each person should not forget to do his or her personal "bit" to help in the general campaign for food conservation. If you have a garden, remember to begin using your vegetables early—and also to can or dry them before they get old and tough!

Make your preparations well in advance for drying or de-hydrating all the vegetables

that you can. For information as to methods see last month's GARDEN MAGAZINE. A practical and economical "evaporator" of family size may be had for a few dollars. While small enough for one person, the smallest size is large enough for several persons to use together, as it will be required occasionally. For society or club an outfit of larger size can be bought.

In addition to taking care of your personal requirements, remember that the success of the other suggestions contained in this article depends upon each individual doing his or her part for the common good. If it is necessary for you to contribute, for instance, a couple of hours a week to the Garden Club Vegetable Exchange, in order to make it a success, don't be a slacker!

Water to Increase Garden Efficiency

G. W. HOOD
University of Nebraska

IRRIGATION SYSTEMS THAT ENSURE THE GREATEST YIELD OF CROPS—IMPORTANCE OF APPLYING WATER UNDER CONTROL

WHEN Mr. Edgar McFarland in Tennessee can produce enough vegetables to feed his entire family during the year from a piece of ground 25 x 100 feet by the use of a \$12 irrigation system; and the Seabrook farms in New Jersey can raise consistently 500 or more bushels of potatoes to the acre; and Belden & Sons of Massachusetts can increase their onion yield from 300 to 800 bushels an acre by the aid of irrigation, the rest of us can hardly ignore the thought that water is the *limiting factor in the production of crops*, not only in the semi-arid but in all regions. The use of water to irrigate growing plants is nothing more or less than a good insurance policy, and it is needed perhaps more this year than ever, because with a possible world's food shortage staring us in the face we

ery is the keynote to success and to-day the grower is better supplied with tools of high quality than ever before in the history of the civilized world.

Yet, with the great development of all the devices for the cultivation of the land, with all the means at our disposal for the increased output of our farms, there still remains the one great limiting factor *water*. The plant does not always suffer for lack of water, but its *growth is checked*, and the maximum yield is not received.

The point to which this need for water is felt may or may not be entirely fatal. It may not reach the acute stage of drought in which growth is entirely checked and if continued long enough fatally, but it ranges from the slight need of the plant for water up to the acute need or absolute necessity for it in order for the plant to live.

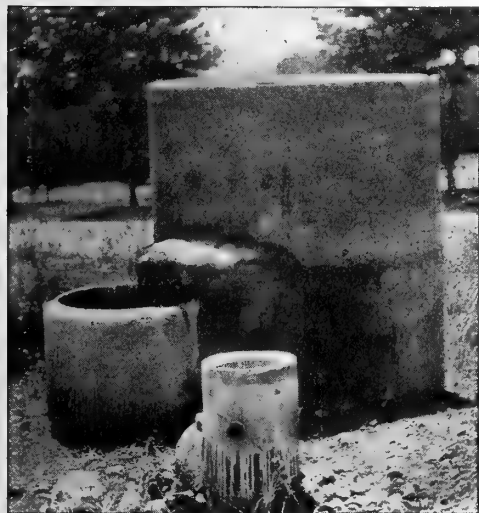
It is generally known that there are certain well-defined regions, of which vast areas are found in many parts of the West, namely in Nebraska, Kansas, Oklahoma, Utah, California, and a few other places where extra water supply is an absolute necessity for the growth of plants. And it is taken as a matter of course that some way of applying it is installed. But seldom do people in the more humid areas suspect that in their own community the yields could be materially increased by the judicious application of water at the proper time. Talk to any grower in the eastern or Middle West where the rainfall varies from 40 to 60 inches of precipitation for the year, and he will say, "we don't need irrigation in our section, we are especially blessed with plenty of natural rainfall. Our crops do well and produce abundantly." While we agree that certain regions are especially blessed with 40 or 50 inches of rainfall in a year, the question remains—does this vast amount of precipitation come at the proper time every year?

It takes but little persuasion to convince the grower in a semi-arid region where the rainfall is 8 to 20 inches a year that water is necessary for the production of a good crop. It is, however, more difficult to convince the grower in a region with 40 inches of rainfall that artificial watering may be necessary.

Though the great problem of soil moisture is in its evolutionary stage and each year sees

different theories and ideas for the conserving of the natural soil moisture, yet it can be said, without a shadow of a doubt, that the application of water to the land is beneficial in every section of the country some of the time and in some section of the country all of the time.

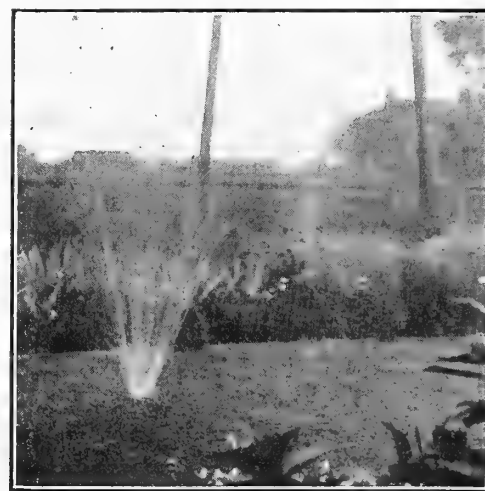
Just what the early history of irrigation is I am unable to say, but we read accounts of the great crops that have been produced in the old countries of Egypt and China where the most primitive methods of applying water to the soil still exist. If I am rightly informed the early use of water in the form of irrigation began in this country in the early 'forties. If my information is authentic Brigham Young, the founder of irrigation in the United States when he led a small band of 147 followers to the region which is now known as Utah, and encouraging his followers to be farmers said:



Large and small standpipes ensure surface irrigation. The larger one serves as a head. Water is distributed through the openings in the smaller one

cannot afford to have a crop failure. Every one naturally feels that a greater acreage is necessary. But though more acres make for more food, yet without sufficient water more acreage will be of little value.

Within the last few years the manufacturing industries have given to the tiller of the soil all kinds of devices for the improvement and betterment of the land. Efficiency of machin-



There are several patterns of sprinklers. They may be attached to moveable surface hose or to underground permanent pipes

"spread the water out upon the land and you will have bountiful crops." To-day there are many systems of irrigation in use and many variations of each system to suit the different sections of the country.

The principal methods are: (1) open ditch; (2) overhead system, divided into the sprinkler system, the spray nozzle system, the spray line; (3) the surface nozzle sprinkler and side



A strong spray machine like this is for use where city pressure is available. The nozzles rotate and distribution is over a large area

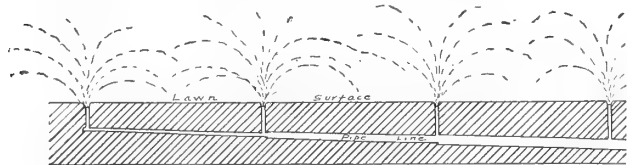
line sprinkler; (4) subirrigation; (5) Thompson underground conveyed surface irrigation; (6) sunken bed or check system of irrigation; (7) raised bed irrigation.

Open ditch method. The open ditch method is perhaps the most primitive method. Its construction is simple and consists only in the digging of a ditch to convey the water to the place where it is wanted. Two kinds of ditches are usually spoken of in this method, namely the main ditch and the laterals. The main ditch carries the water from the reservoir or well, while the smaller ditches or furrows which lead from the main ditch take water to the crops that are being watered. This system was first used on all crops that were planted in rows such as potatoes, sugar beets, corn, fruit, and vegetables. The open ditch method is still in use and extensively employed.

The chief trouble in furrow irrigation is to divide the water in the head ditch equally among a large number of rows.

The sprinkler system. Some few years ago this system of irrigation was brought into prominence by Mr. Skinner and to-day the Skinner system of irrigation is known to almost every one interested in the application of water to plants. In brief the Skinner system aims to apply the water to the soil in the form of a fine spray, directed from specially designed nozzles above the plant. The water falls gently to the ground and in the same manner as rain. This method has met with the approval of many growers and at present extensive areas are under this method of artificial watering with excellent results.

There are several modifications of the sprinkler system to meet the needs of different conditions. The overhead system is applicable to commercial vegetable gardens, but does not make an artistic feature in a beautiful flower garden or on a well kept lawn. To meet the requirement of the last named condition there

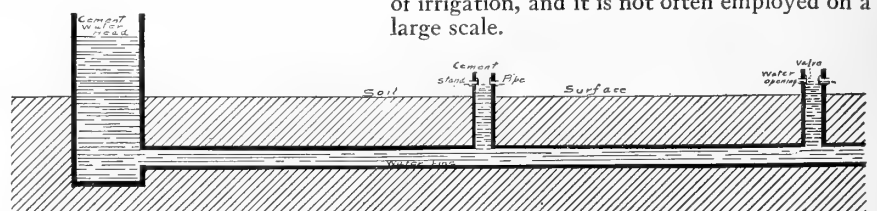


Method of laying underground pipe for a permanent lawn system where outside or city pressure is available



A very practical way of using the nozzle line system in enclosed gardens. The fixture is not conspicuous and is out of the way

A different form of the sprinkler system is seen when enclosed gardens are to be watered; the pipes are placed along the wall and not under the ground and instead of nozzles which throw a cone shaped spray there are small holes bored in the pipe to distribute the water. In some sections of the West notably southern California, a modification of this permanent system is in vogue. This consists of a short pipe one half inch in diameter and eight to ten



System in vogue when pressure is had from head in large cement tank. Distribution is through side holes in smaller pipes

has sprung into existence a most unique and highly effective underground surface sprinkler. This sprinkler is for use on lawns and flower gardens.

It consists of permanent water pipes which are laid under the ground and at given uniform distances sprinkler nozzles are brought to the surface of the ground. These nozzles throw a cone-shaped spray and are spaced so that the spray from one nozzle will meet that of the other and thus all of the surface of the soil is reached by the spray. The distance apart the sprayers must be placed depends upon the water pressure. The lines of pipes run parallel and several sprinklers are attached to the same line so that all may be turned on at one time. This method is, I think, unexcelled for the uniform watering of lawns. The nozzles being placed at the surface of the ground, they are not visible and do not interfere with the mowing of the grass.

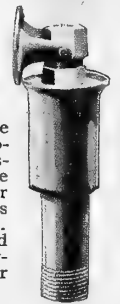
feet in length in which a number of small holes are made. The pipe is then raised six to eight inches from the ground. One end is fastened up while a hose is placed on the opposite end. This is quite effective for large lawns and is preferable to the round sprinklers.

The Thompson system. The Thompson system of irrigation is in use to a large extent in southern California. The method might easily be called the underground conveyed surface irrigation system. The name is at once clear when the method is described.

Cement tile are the conveying agents. These tile vary in size, determined by the amount of water which it is necessary to conduct. At the end of the row of tile is a head of water, held in a concrete basin. This basin is either round or square, and is usually about four feet in diameter or four feet square. The height varies from four to five feet. From this basin which serves as a head for the water, the tile is laid underground the entire length of the field. Along this pipe line at varying intervals are smaller cement standpipes one foot in diameter which come to the surface of the ground and extend about twelve inches above it. The distance apart of these smaller standpipes is determined by the crop and the volume of water which it is necessary to use. In an orchard they are usually spaced the same distance the trees are set, and are located at the ends of the rows of trees. In garden irrigation the distance is determined by the crop.

This system is operated by the use of four valves one on each side of the small standpipe and the water is controlled and regulated by the opening and closing of these valves. This method is satisfactory from certain standpoints: (1) the water is conveyed underground and no loss or leakage of water is encountered, (2) the water is more evenly distributed, (3) there is less loss and consequently a greater area of land can be irrigated by the same amount of water, (4) the control of the flow of water is easily and effectively regulated so that the operator can turn it on and let it run all night without watching. (5) The stream of water is even, regular, and uniform. (6) the water can be carried to different levels.

Sunken bed irrigation. This system is in vogue in many sections of California, and I see no reason why it is not adapted to other regions where the need of water is felt. As the name implies, the crops are planted in narrow beds surrounded with a shallow ridge of earth. The ridge prevents the water from spreading all around and the water can be turned in when it is needed in any bed. This system is really nothing more than flooding the soil, but regulated to any degree by the grower. Vegetable crops do the best under this form of irrigation, and it is not often employed on a large scale.





•Bearberry spreads over the foreground of this bank. It is a rapid grower on sandy soils fully exposed to the sun

Native Evergreens Suitable for Ground-Covers

EDWIN H. COSTICH, Long Island

SUGGESTING NEW USES FOR MANY PLANTS WELL KNOWN IN THE WILD, YET RARELY TO BE SEEN IN GARDENS

IN THESE days of slogans voicing the sentiment that we should "Use American Made" goods, it seems a fine opportunity to apply the idea to our gardens, and incidentally to get gardening folks acquainted with our native plants. And as ground-cover plants are coming to be more and more recognized as very important to good gardening and landscape work, it would not seem out of place to begin with them in developing a wider use of our native material.

Garden makers generally realize the need of more material to serve as covers to carpet the ground, something that will take the place of grass and cover that shaded bare space under the trees, that will clothe the grassy patches and join the shrub groups together.

And evergreen ground-covers are economical. When once planted they require practically no attention and many of them will thrive where it has been almost impossible to establish any vegetation before. Planted between the shrubs of the border they eliminate the necessity of hoeing, which is quite an important item in the upkeep of any garden; covering a washed-out bank they will do away with the inevitable gouged and furrowed appearance, and the work of filling in after each rain.

The plants noted here are primarily ground-cover plants, that is, plants that do not commonly exceed two to two and one half feet in height. Being evergreens, they include both broad-leaved and coniferous plants. Many of the species mentioned, though native, are not ordinarily obtainable in our own nurseries (except from a few specialists in native plant material); although they are adequately appreciated by the foreign trade; as our nurserymen wake up to their opportunities these plants will be more generally grown. Meanwhile, we can go to the woods, pine barrens and swampy places and collect them for ourselves. They will repay all the time and money expended on them by their charming and delicate simplicity and their adaptability to our gardens.

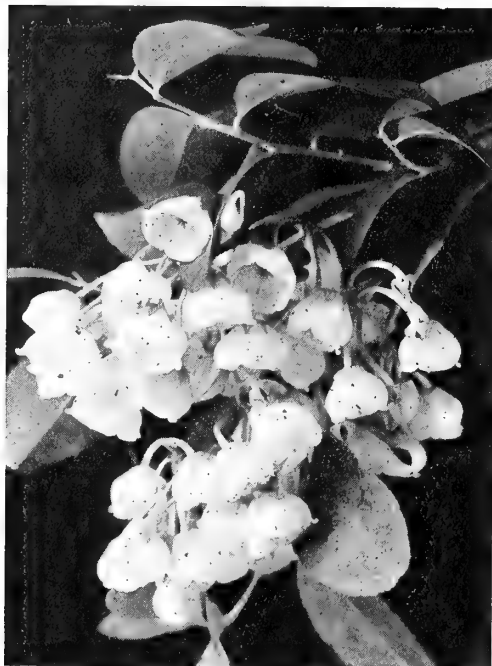
Presenting these plants as ground-covers is perhaps putting them in a new rôle. They have heretofore been considered, whenever they have been considered at all, as rock garden subjects. But that should not preclude their use as cover plants. Many of the plants described below have not been tried out in this way, and the experimenter may look forward to a good deal of enjoyment in testing them. There are several (as *Arctostaphylos*, *Taxus*, and *Juniperus*) that will undoubtedly produce desired

results in a shorter time than some of the smaller, slower growing kinds, but each one has some particular merit peculiar to itself that makes it a valuable addition to the list of our worth-while garden plants.

The Big Heath Family

THE heath family is especially rich in evergreen ground-covers contributing at least seventeen species native of the northeastern states and eastern Canada.

BEARBERRY or Deerfeed (*Arctostaphylos Uva-ursi*) is perhaps the finest of all evergreen ground-cover plants for dry, sandy, acid soil. Growing wild on the sandy wastes and pine-barrens of New Jersey, Long Island and along the shores of Cape Cod, it covers thousands of acres of cheerless sand with a veritable carpet of shining green. The long vine-like runners reach out over the ground, and in a short time cover it entirely. In the spring the inconspicuous pink and white flowers can be found hidden among the leaves, and later on the crimson berries are very noticeable. The Bearberry is used as a cover plant on dry banks, under shrubbery, or as an edging plant along a border it does admirably. If planted in a lime-soil country, it must have



Showy Andromeda (*Zenobia* or *Andromeda speciosa*) is a half evergreen about 2 ft. high with highly attractive white flowers. Foliage bluish white

soil specially prepared, as is the case of nearly all ericaceous plants.

BOX HUCKLEBERRY (*Gaylussacia brachycera*) is a low evergreen shrub with creeping branches. The coriaceous leaves somewhat resemble those of the common Boxwood. This is a remarkably beautiful evergreen, very closely related to the Bearberry and a coming plant for gardens and rockeries. It is reported as native in three states and should soon be available to our gardens.

MOUNTAIN CRANBERRY (*Vaccinium vitis-idaea*), a native of Arctic America and south through the New England States to Massachusetts, forms dense, low mats of dark lustrous green. It is especially suited to dry, rocky banks.

BOG ROSEMARY (*Andromeda glaucophylla* and *Andromeda polifolia*), besides being good cover plants are very showy in flower and the glossy whitened underside of the leaves is very distinctive. The small pinkish white flowers, borne in graceful terminal clusters, are very attractive. The Andromedas are adapted for rockery and border planting.

FETTER BUSH (*Leucothoe catesbaei*) is one of the few of our native plants that has had the recognition it deserved. It, however, has never been extensively planted as a ground-cover, but more often as a border plant in front of Rhododendrons to hide that "leggy" appearance of the long stems. The lavender and purple autumn and winter coloring of the Fetter Bush is in marked contrast to the heavy green of other broad-leaved evergreens.

SHEEP LAUREL (*Kalmia angustifolia*), a plant seldom more than two feet high, forms broad stretches of green covering through the woods. It is well worth planting not only for the evergreen effect it gives, but also for the delicate crimson flowers it produces in June.

SAND MYRTLE (*Leiophyllum buxifolium*) and **LABRADOR TEA** (*Ledum groenlandicum*) are very similar in all aspects. They have clustered flowers and characteristic rusty wool covering of the underside of the leaves. Few plants have more delightfully delicate flowers.

TRAILING ARBUTUS (*Epigaea repens*) and

the common **WINTERGREEN** (*Gaultheria procumbens*) are known to every one but they are seldom seen in cultivation. And yet they are both low evergreens and are natural cover plants.

SHIN LEAF (*Pyrola*) and the **PRINCE'S PINE** (*Chimaphila*) are low evergreen herbs nearly herbaceous. The flowers of the Shin Leaf are particularly showy for so small a plant. The variegated leaves of the Prince's Pine are remarkably handsome, especially against a background of fallen autumn leaves.

CREeping SNOWBERRY (*Chiogenes hispida*) is a creeping evergreen with very slender trailing branches. A very good ground-cover but preferably a rock garden plant, where it will carpet the rocks and earth very effectively.

Other Broad-leaved Kinds

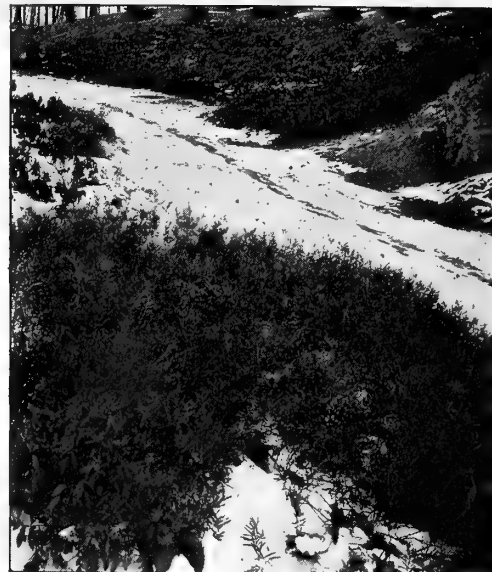
BUT not all of the cover plants belong to the heath family. The **FLOWERING MOSS**, **Pine-Barren Beauty** or **Pyxie** (*Pyxidantha barbulata*) is a very dainty evergreen creeping plant producing delicate white flowers from its cushion-like masses. The **Southern GALAX** (*Galax aphylla*) is an evergreen herb distantly related to the Pyxie and worthy of being tried as a cover plant. It has been used occasionally in rock garden work, and as an edging plant in the woods it has been successfully planted on Long Island.

Every one acquainted with the woods knows the **PARTRIDGE BERRY** or **SQUAW BERRY** (*Mitchella repens*) one of the finest of native evergreen cover plants. The shining, roundish, evergreen leaves, often variegated with white lines and the crimson berries, are uncommonly attractive. The Partridge Berry thrives very well under evergreen trees, forming dense mats. The small, pink flowers are not particularly striking but are quite fragrant.

CROWBERRY (*Empetrum nigrum*), a prostrate, spreading heath-like plant, is a pretty evergreen said to be best adapted to rock gar-



Sand Myrtle (*Leiophyllum buxifolium*) has white flowers; leaves are rusty color below



In winter time evergreen cover plants greatly brighten banks and roadways. *Andromeda floribunda* and *A. polifolia*

den planting but will thrive vigorously when planted in shaded places in the woods. The inconspicuous flowers are followed by black, edible berries.

BROOM CROWBERRY (*Corema Conradii*), growing on the sandy pine-barrens of New Jersey is one of the showiest of evergreen flowering plants. It is a low, much-branched shrub with narrow leaves quite like those of the heath. It is only a question of time before the majority of these plants find their way into our gardens, but in the case of the *Corema* the time is short for it has already attracted the attention of growers of native plants.

RAT-STRIPPER (*Pachistima Canbyi*), a low evergreen shrub, native of the mountains of the Virginias, is one of the handsomest of trailing evergreen plants. This does well when planted en masse, as an edging plant, or in rockeries—it seems to thrive best in shaded woodland plantings.

SPINDLE BUSH (*Evonymus obovatus*), semi-evergreen trailer, is well adapted for planting as a ground-cover under shade trees. It would be suitably planted under tall, broad-leaved shrubs.

Dwarf and Trailing Conifers

AMONG the coniferous plants, the **CANADIAN YEW** or **Ground Hemlock** is a remarkably successful ground-cover. The spreading and occasional upright growth of its slender feathery branches, and the added beauty of its cheery red cherry-like fruits, make it one of the most finished of evergreen ground-cover plants. When planted thickly throughout a woodland it adds the touch of the primeval. It will thrive in any well-drained soil, and sometimes does well in moist places. An ideal evergreen ground-cover is a combination of Bearberry and Canadian Yew—the upright spikes of the Yew lending the needed contrast to the broad, even stretches of the Bearberry.

The depressed and trailing forms of the *Common Juniper* (*Juniperus communis*) are also excellent cover plants. *J. communis depressa*, with its spreading prostrate branches covers large patches of ground in its native habitat. *Juniperus horizontalis* is said to be even more procumbent in habit than variety *depressa*, and has long, trailing branches.

"Pay Your Money and Take Your Choice" F. M. THOMAS Pennsylvania

AN APPRAISAL OF RECENT OFFERINGS OF NEWER IRIS AND OTHER HARDY PERENNIALS FROM AN AMERICAN GARDENER'S VIEWPOINT—MAKE YOUR SELECTIONS FOR PLANTING NEXT MONTH

IT IS almost a commonplace that every aspiring garden-enthusiast looks to the catalogues of European firms like Perry, Wallace, Barr, or Goos & Koene-mann for the latest and best developments in hardy perennials.

Outside of the Iris and the Peony, in both of which plants we make a fairly good showing, I can at the moment recall only a couple of Phloxes and I think two varieties of Heleniums as constituting the sum-total of our original output in this line. Possessing, as we do, genuinely great plant growers or raisers, there seems to be no reason why, potentially at least, we should not rival any of the European countries.

However, it is not my intention to examine into the cause of this rather discouraging state of affairs, but rather to discuss its particular result—that the inquiring amateur who looks through the alluring list of novelties is served with descriptions of plants given them by the foreign firms that originated or disseminated them. Now, these descriptions are sometimes quite accurate, sometimes they are altogether inaccurate; but very seldom are they what is needed to help the prospective collector decide whether the particular plant in question is the sort of thing for his garden. Of course this method of procedure on the part of the nurserymen is often unavoidable in cases where no opportunity is to be had for trying out the novelty prior to its introduction; but as the catalogue descriptions rarely vary from year to year, it would seem that the gardening public is not getting quite all it deserves.

In the hope that my own experiences may perhaps be of some value to others, I shall briefly go over a list of some of the recent novelties, always looking at the subject from the viewpoint of the American flower-gardener. Beyond an accurate description, any strictly impartial rating is of course impossible; the personal equation is bound to enter here—but that is sometimes oddly illuminating.

OF ALL the hardy plants introduced within the last few years, the new varieties of *Anchusa italica* are probably the most meritorious. Indeed, their reputation has already spread so far that it may be questioned whether they can be considered in the light of "novelties" at all; so it is only to clear up certain points about them that I have included them in my list. It is quite true, as the growers claim, that next to Delphiniums the Anchusas are the best hardy plants with blue flowers, but it is quite as untrue that they generally grow six feet high, or that they bloom all summer, or that, strictly speaking, they can be classed as perennials at all! Their real blooming period is six or seven weeks at best, their real height from three to five feet; and, as for their life-time, it is not much longer than that of the Foxglove—at least no one should count on their lasting more than one additional season after they have come into bloom. The immense succulent crowns soon split up with age, water collects in the hollows, and by spring there is nothing left but an unattractive black mass of decay. Encouraging the formation of strong new growth by cutting the stems to the ground immediately after flowering will help to some extent (the same is true of the Foxglove), but it is something of a gamble at best. As for the flowers, one can't praise

them enough; it is a toss-up between *Dropmore* and *Opal* as to which possesses the most delicious shade of blue—I am inclined a trifle toward the latter. Far inferior to either is *Perry's Variety*, which I am glad to see is already dropping out of the catalogues. It is of a much deeper blue, to be sure, but the flowers are much smaller and the whole plant is of a most disagreeably lank and leggy habit.

Proceeding alphabetically let's make the next stop at the *Aconitums*, two varieties of which the catalogue says are "splendid acquisitions." *Sparks's Variety*, blooming in late June, has a most graceful, branching habit, with finely divided leaves and flowers of the richest deep violet. It is a much taller grower than the old *Napellus*, and altogether quite supersedes that kind. As a pendant we have



For August and September bloom there are several varieties of the dwarf Asters (amellus section)

Mr. Wilson's aconite (*A. Wilsoni*) which, with me, has bloomed in early October, not in September, as has been repeatedly stated. It is a very robust grower—five or even six feet tall, with coarse Delphinium-like leaves and very large, fully inflated flowers, of the most delightful shade of rich lavender,—a shade that for cool purity of tone recalls certain Irises of the pallida group. It is not so branching as *Sparks's*, so the older it grows and the more spikes to a clump the better the appearance.

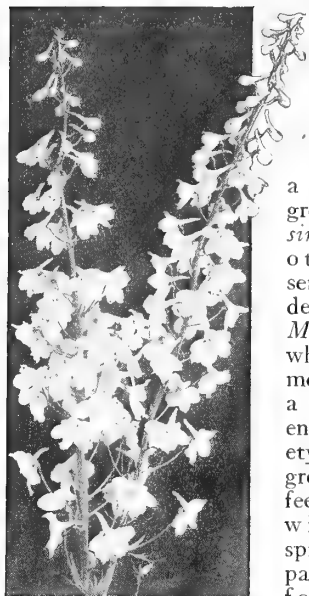
THOUGH their seasons of bloom do not over-lap quite accurately, *Aconitum Wilsoni* makes a charming combination with *Anemone Queen Charlotte*; and let me say that the latter plant is still to my mind the queen of all the pink Anemones. *Alice*, which has been trumpeted as an improvement over *Her Majesty*, is most decidedly nothing of the sort, though a rather handsome flower in its own way. It is a deeper pink, but, unfortunately, also a more purplish tone; in fact one step more and it would not be far removed from those horrible aniline shades that crop out occasionally in Annual Asters. *Kriemhilde* and *Loreley*, two other new-comers, appeal to me much more. Which is which, I have been unable to discover, for they look exactly alike to me,

but at any rate they have flowers more nearly double than *Queen Charlotte*, but with narrower petals, stained a deeper pink at the tips. I find them rather variable both in form and color, but never do they attain the "reddish lilac" credited to them by the introducer.

Artemisia lactiflora is a very robust and rank growing plant, four or five feet tall, with huge, gracefully paniculate heads of flowers something in the style of the Tall Golden-rod. The individual flowers are very minute, and never seem to really open, but the whole plant gives a charming foamy effect of white that is well set off by the fresh green leaves, drooping and deeply cut. Its odor, if not exactly that "of Hawthorn," is decidedly pleasant—pungent and mildly aromatic and not at all rank. *Artemisia lactiflora* is beginning to grow shabby just as the *Hardy Asters* come into bloom. It is good indeed to see our American flower gardeners at last awakening to the possibilities of these glorious native plants—after they have been appreciated for so long abroad! Prophets in their own country indeed! None of the newer varieties that I have seen are poor; perhaps the best of all is *Climax*, which has very large daisy-like flowers with soft yellow centres, that fairly load down the big tall plants. Their color is that unapproachable lavender seen only in these plants and in a few Irises, such as the incomparable *pallida dalmatica*. *Feltham Blue* is another excellent single; *Beauty of Colwall*, generally listed as the "best double," proved something of a disappointment to me—the color and shape of the individual flower are excellent, but they open irregularly, and the plant seemed rather stiff in habit. *St. Egwin* is not a clear pink, as I had expected, but a delightful lavender-pink. It is a rather short and compact grower, and fairly smothered with bloom.

Aster grandiflorus is quite all that has been claimed. Blooming in early November, even after *Aster tataricus*, its rich purple flowers are more than welcome. In color they closely approach the wild New England Aster, but they are a trifle larger and the plant is under three feet in height. The dwarf *Amellus* section, blooming much earlier in August and September, have never particularly appealed to me, though undoubtedly they give fine effects in large masses. Of these *Perry's Favorite* is an excellent lavender-pink, and *Beauty of Ronsdorf*, with less pink and more lavender, is equally good.

IN THE Delphiniums there is surely an embarrassment of riches. Although *Kelway and Son* had been offering hundreds of varieties for some years back, it is only within the last season or two that we in America have begun to get a taste of the newer hybrids. Of these, *Capri*, *Mrs. Brunton*, *Moerheimi*, *Theodora*, and *Lamartine* are generally classed in one group as the "Belladonna Hybrids," and they far surpass their parent in both their graceful branching growth and their wonderful freedom of bloom. Indeed this freedom of bloom is perhaps their most striking quality; where the older varieties gave only two crops of flowers, these give at least four. Indeed with me *Belladonna Semiplenum* bloomed almost continuously from the first of June to the middle of October, one crop of flowers springing up before the others were faded.



Moerheim's Larkspur is well described as a white counterpart of Capri

Of the singles, *Capri* is a very tall grower with large flat blossoms of the most delicate sky blue. It is a much better grower than *Per-simmon*, which it otherwise resembles. Next in depth of color is *Mrs. Brunton*, whose blue is also more intense, with a lustre like blue enamel. This variety is of dwarf growth (about three feet) with very wide, branching spikes of bloom and particularly well-formed flowers. Next comes *Theodora*, to me the most beautiful and distinct of single *Delphiniums*. Its graceful spikes of flowers are of the richest corn-flower blue, with an unusual soft brown centre. This latter together with its soft and finely cut sage green foliage help to give it a different quality from any other Larkspur, but its chief glory is its color; massed, it gives an effect that cannot be approached for richness and depth. *Lamartine* is the darkest of all; its very deep navy blue, set off with a pure white eye, is very striking, though not so harmonious as *Theodora*. The variety *Moerheimi* has been so lauded that we might reasonably be prepared for a slight disappointment, but happily nothing of the sort is in store for us. As the originator has stated, it is the exact counterpart, in form and habit, of *Capri*, but in color a pure white, with a cream white eye. The flower is precisely like a much magnified white Chinese Larkspur, which sets one speculating as to its parentage. Those unfortunate gardeners who have difficulty in growing *Lilium Candidum* should not fail to avail themselves of *Moerheimi* as the best of substitutes, for grouping with the blue Larkspurs.

I must confess to a rather decided prejudice against *Double Delphiniums*. As a rule, they strike me as being altogether too showy; "over-dressed," one might say. So I shall leave their extended description to some one more sympathetic to their charms. I must say a good word, however, for the excellence of *Mrs. Creighton* and *Zuster Lugton* as cut flowers. Both these varieties are in shades of very deep blue and violet, which, indoors, take on a peculiarly luminous effect, like bits of old stained glass. *Belladonna Semi-plenum*, as its name might suggest, escapes all the usual faults of the double kinds; and for this variety I have nothing but praise. Its loose semi-double flowers are of a slightly deeper blue than *Capri*, with a little dash of lilac on each petal. This does not "mud" the color in the least as one might expect; at a distance it is entirely invisible, and close at hand it only gives the flower an added charm.

Modern Irises That Outclass the Old

IT WILL be well to consider the Irises in detail at this time especially as their planting time is at hand whereas the other subjects can wait a month, and better indeed, some perennials stay in the catalogues year after year

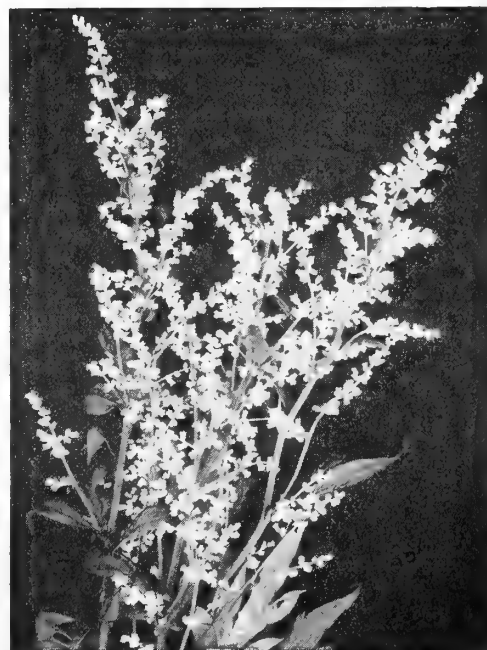
with little or no change or improvement. But others, more plastic in the hands of the plant breeder (or perhaps merely more popular with the public), are being constantly developed.

In the case of the German Iris, this development has been especially marked.

As the usual story runs, a majority of the newer Irises were appreciated in England and the continent long before they reached this country. Nevertheless, since the introduction by one of our largest nurseries of the new Goos & Koenemann seedlings, shortly after they were first disseminated abroad, the list of available European novelties has grown steadily longer, until to-day practically every progressive nursery catalogue at least a few. And a new impetus to the growing of the newer Irises has undoubtedly been given to the American flower gardeners by Mr. B. H. Farr, who, since 1910, has been sending out his own seedlings at the rate of four or five a year. That Mr. Farr has been almost without a rival in the American field may seem a bit strange, considering how easy a plant the Iris is to experiment with.

One of the most striking characteristics of a majority of the newer Irises is the large size and great substance of their blooms. The massive form of the pallida and early-flowering germanica types predominate, and no doubt this has been secured by using these types as seed parents to be crossed with the smaller, but often more brilliantly or richly colored variegata and squalens sections. This combination of brilliant coloring and large size is particularly noticeable in the Goos & Koenemann novelties. One might easily imagine that four at least of these Irises are descended from a single seed parent, even from a single pod, so closely are they related in their general scheme of coloring: white or yellow standards, and broad falls of some purple shade, with wide light colored margins:

Rhein Nixe has pure white standards and deep violet-blue falls, with broad white margins; *Loreley* has the same violet-blue falls, but margined cream color, while the standards are a light lemon yellow. *Princess Victoria Louise* repeats the same color scheme as *Loreley*, but with falls of a light reddish-purple. In *Nibelungen* the standards are of a clouded



The Milk-flowered Ragweed is really useful for mass effects of white foam in late summer (*Artemisia lactiflora*)

fawn-yellow; the same shade margins the falls, which are a deep purple. None of these varieties is particularly subtle or harmonious in coloring, but all have an attractive freshness and brilliancy, and are not too garish to combine easily with Irises of similar types. Of the four, *Rhein Nixe* and *Princess Victoria Louise* are perhaps the most desirable.

Two other Goos & Koenemann seedlings are of a different type. *Pfaunauge*, or Peacock's eye, is a name that raises high anticipations, but to my mind the plant is comparatively disappointing; very dwarf, not large in flower, and though

distinct, too somber in color to be pleasing. *Iris King* (*Iriskoening*), however, is a magnificent flower, one of the finest of all in its depth and richness of coloring. The bloom is large and widely expanded, the standards a fawn-yellow, of unusual quality, the falls a deep maroon-red, of peculiar velvetiness of texture with a narrow margin of deep yellow. This same variety, by the way, is sometimes seen in English lists under the name of *King of Irises*, and in French catalogues as "*Reine des Irises*." This last a rather amusing perversion.

Certainly the French are quite able to stand on their own merits as raisers of new Iris, when they have produced such splendid sorts as *Alcazar*, *Archeveque*, *Oriflamme*, *Monseigneur*, *Prosper Laugier*, and *Edouard Michel*. None of these, strange to say, is the creation of M. Victor Lemoine, whose name has been long associated with the most wonderful improvements in both herbaceous plants and shrubs.

The first three varieties mentioned above are of the early flowered germanica type, and in coloring are related to such well-known kinds as *Amas*, *Kharput*, and the common, but by-no-means-to-be-despised, "*Blue Flag*." All three are of robust growth, with immense blooms that give a particularly imposing effect in the garden.

Alcazar has standards of a light dull violet and falls of deep purple, flushed and veined bronze toward the base—a somber yet striking coloring, that might well deserve the name "*Nuee d'Orange*," really the title of another French introduction, said to be equally fine, but which I have not yet seen in bloom. *Archeveque* has a brighter, and to me a richer and more pleasing coloring, with plum-colored standards and very deep-glowing purplish-plum falls, suggesting the petals of a pansy in their extreme velvetiness of texture. Some gardener of our middle Atlantic states, where the blooming periods of Irises and late Tulips overlap, should try combining this magnificent Iris with that equally magnificent Tulip *Walter T. Ware*. Unfortunately that gardener will have to be a person of considerable means, if



The Monkshoods in Sparks' and Wilson's varieties bloom from June to October

he invests largely in these two plants at their present prices! *Ori flame*, the last of the trio, is also the largest, possibly the largest of all German Irises, with lavender standards and long drooping violet-purple falls, quite in the manner of Amas.

Monseigneur (or Monsignor) is both a curious and handsome flower. The ground coloring of both standards and falls is a rather pale slaty violet, but in the falls this is most densely and intricately veined and overlaid with deepest claret-purple. "A very beautiful piece of rich coloring," as one catalogue aptly describes it.

Prosper Laugier is a genuine improvement on Jaquiniana, formerly the most beautiful Iris of the squalens section. The standards of Prosper Laugier are of almost the same clouded, iridescent bronze, the falls, broader and more wide-spreading than Jaquiniana, are of the richest wine-color, veined deeper at the base.

As for *Edouard Michel* (of the pallida type), an improvement on both Caprice and the older Mme. Paquette, it is one of those Irises to which no description does justice. The flower is of the largest, with falls thick, broad and fluted, and both standards and falls are stained—saturated—no word quite expresses it, with the most luscious deep claret-red. The flower stems are above the average in height, and they bear the flowers aloft with a very fitting dignity.

Crossing to England, we find a bewildering number of new Irises, of all degrees of merit, many entirely unknown in this country. Of all these sorts, the most unusual and strangely attractive is *Isoline*; a flower that, literally, must be seen to be appreciated, as it is almost impossible to give any adequate idea of its peculiar quality of coloring. Standards of dull clouded pinkish-lilac, falls old rose, suffused purplish, and shot with coppery gleams that seem to converge in the distinct "old gold" beard—this is an approximation of the general effect, but the whole flower has a unique opalescence impossible to imprison in words. The blooms are large, well-formed and of great substance, with long, drooping falls, and the plant is tall and vigorous in habit, with leaves of unusual size.

The general effect of *Isoline*, if not pink, is distinctly pinkish, and there are a number of Irises that also must be placed near the red rather than the blue end of the spectrum—in particular *Windham* (described under the Farr seedlings), *Queen of May*, *Her Majesty*, *Mrs. Allan Gray*, *Trautlieb* and *Lohengrin*, all of the pallida section (Some of these could hardly be called new, but I group them here for the convenience of the flower-gardener who might wish to know the relative value of the various so-called "pink" Irises).

Queen of May was the first to be introduced, but it is still one of the best in its vigorous growth, tall flower stem ($3\frac{1}{2}$ ft.), and large, well-shaped flower. The color is a light lilac, of rather pinkish tone, shading a trifle deeper in the falls, which are veined darker toward the base. A brighter, clearer color is *Her Majesty*, though a plant shorter and less robust in habit. The standards are a really exquisite shade of lilac-pink—almost an old rose—the falls have a deeper and more elaborate veining than *Queen of May*. With the exception of *Windham*, *Her Majesty* is the nearest approach to a true pink of any in this group, and when cut or seen close to, the bloom is one of the most attractive of all, but, in common with most flowers having distinct veins or eyes, is hardly as effective in the gar-

den, particularly in large masses, as the self-colored sorts such, for instance, as *Mrs. Allan Gray*. This variety is of a pale uniform pinkish lilac, not so bright as *Her Majesty*, but of beautiful soft tone and silky texture. The medium-sized flowers are of a particularly neat and graceful outline, and the plant has the odd and delightful habit of often sending up a second crop of flower stems in August, generally considerably larger than the ones of June. *Trautlieb* is another self-colored lilac-pink, shading to white at the base of the petals; small, but charmingly clear and dainty in coloring. *Lohengrin* is the least pink and the largest of this group; a superb widely expanded, thick-petaled flower of rich silvery lilac, shading deeper on the falls; much the tone of a *Cattleya Orchid*, as the originator has noted.

It goes without saying that these "pink" Irises should never be seen near the vivid yellow and red-brown variegatas, and in combining them with the lavender and violet sorts it is well to remember that it is best to use those approaching nearest to blue as they make the pink appear purer and more intense by contrast.

Of the other English varieties, *Caterina* is a sort of variant on the incomparable pallida dalmatica; hardly an improvement, though a fine enough Iris in its own way. Its conical lavender standards are of a rather more bluish tone than dalmatica; the falls, long and drooping, instead of horizontal, are veined brownish at the base. *Caterina* is very fragrant, and a remarkably tall grower—often four and one half feet.

There are numberless other English sorts, some of which I have not tried, some I have tried and found wanting (like the atrocious *Mrs. Arthur Dugdale*, surely the ugliest Iris in existence) and still others that are at present hanging in the balance, like the strange hybrids of *Iris paradoxa*, *Parvar* and *Paracina*, wonderful in their somber and velvety purple-blacks, but apparently difficult to handle and shy or uncertain bloomers. Last to bloom is the sumptuous *Black Prince* (or as it is sometimes called in this country, *Black Knight*) introduced ten years ago, but still scarce and expensive, and still the finest of all the very dark purple germanica sorts.

The Farr seedlings already referred to are some thirty in number, and as variable in merit as they are in size and color. Here, particularly, it must be largely a matter of personal taste in choosing "the best"; nevertheless, I think few will be disappointed in the kinds described below, though they might wonder at the omission of certain names.

Of the thirty, five seem to me to be of the highest quality, comparable with any sorts now grown: *White Knight*, *Anna Farr*, *Minnehaha*, *Quaker Lady*, and *Windham*. In *White Knight*, originated by Prof. Saunders but dissembled by Farr, we have at last what has been so long needed—a late white Iris, as good in its season as the early-blooming *florentina*. It is solidly white, a big improvement over such near-white sorts as *Miss Willmot*. Whether it surpasses *Wallace's new Kashmir White* I do not know, never having seen the latter variety in bloom, but at least it would seem that *White Knight* is near enough to perfection to suit the most exacting. And as *White Knight* is the best of white Irises, so *Anna Farr* is the finest of the light colored sorts. Its standards are white, lightly bordered pale lavender-blue; its falls, thick and of a porcelain-like smoothness, are the same pure white, with a few lav-

ender-blue markings at the base. A noble flower of great size and the highest beauty. *Minnehaha*, almost equally large and massive, possesses a coloring totally unlike any other Iris I have seen, with standards of a soft, pale creamy yellow and falls of the same shade, deeply veined with converging lines of maroon. This should prove a valuable variety for use in hybridizing, for what we now most need in German Irises are large-flowering sorts in the pale and rich yellow shades of *Flavescens* and *Aurea*.

Quaker Lady should be classed with *Isoline* for subtle and evanescent charm. Standards are a smoky lavender, with yellow shadings, falls an exquisite soft "ageratum" blue, shading to old gold at base, with a deep yellow beard. Though the yellow shadings light up the flower as if with a golden flush from within, the whole effect is curiously soft and subdued.

Windham, which might be called a glorified *Queen of May*, is undoubtedly the finest variety of its color. Standards are an exquisite clear, pale lilac-pink, falls deeper with still deeper veinings; both standards and falls shade to white at the base. As perfect in size, form and habit, as in coloring, *Windham* is indeed an Iris difficult to over praise.

Very close in merit to the varieties just described are seven others: *Mary Garden*, *Navajo*, *Wyomissing*, *Montezuma*, *Pauline*, *Mary Gray*, and *Juniata*.

I have known persons who actually disliked the variety *Mary Garden*, but, bizarre as the coloring undoubtedly is, to me it has a decided fascination. Mr. Farr's description is so accurate that I quote it verbatim: "Standards pale yellow, flushed pale lavender; long drooping falls, creamy white, minutely dotted and veined maroon; stigmas clear yellow."

Navajo is a huge, striking flower, with bronze-yellow standards, and deep maroon falls lightly veined yellow—a sort of cruder and more startling edition of *Iris King*.

Wyomissing, though hardly as remarkable as description or color plate would lead one to suppose, is nevertheless very distinct and delicate—a sort of pale flesh-color, with dull pinkish shadings and veinings at the base of the falls. It combines effectively with the well-known variety *Mrs. H. Darwin*.

Another very large and imposing Iris from the same source is *Pauline*, whose silky petals are a solid, deep, rich mauve, contrasting oddly, yet effectively with its deep orange beard.

Montezuma is almost as curious as *Mary Garden*, though hardly so fine. Again I quote the originator: "Standards deep golden, minutely dotted brown; falls yellow and white, veined purple and dotted brown: unique." To which I should add that the total effect is a sort of metallic golden-bronze.

Mary Gray and *Juniata* are obviously descendants of pallida dalmatica. The first, a large and lovely flower, is deeper and bluer in tone than dalmatica; *Juniata* is also deeper, but more purple, more on the order of *Albert Victor*. It is notable for its unusually tall flower stem—five feet—and for its luxuriant mass of long, drooping foliage.

Glory of Reading, *Lewis Trowbridge*, *Mt. Penn*, *Powhatan*, *Rose Unique*, *E. L. Crandall*, and *Pocahontas* (the last two variations on the *Anna Farr* type) are all worth growing for one reason or another—the remaining seedlings are unimportant.

[Discussion of plants other than IRIS will be continued next month.—ED.]

A Strawberry Specialist's Intensive "Systems"

F. H. VALENTINE, ^{New Jersey}

INTENSIVE BERRY CULTURE IN HAND TILLED BEDS YIELDING 40,000 QUARTS TO THE ACRE

A METHOD of strawberry growing that produces "at the rate of" 40,000 quarts to the acre, or even 10,000 to 20,000 quarts to the measured acre, is worthy of attention. Tice C. Kevitt, the strawberry specialist, claims that his system will do this—and more. He is constantly studying the strawberry, experimenting in new ways of handling it as a crop, and in the production and testing of new varieties. Thus it comes about that he has an "old system" and a "new system." I say "has an old system," because beds set under that plan are still fruiting.

Look at the Old System

THERE is no question that the "old system" produced big berries and lots of them. Those familiar only with the matted row method of growing strawberries can hardly realize how quickly these big berries fill the baskets, which is what makes these heavy yields possible. Experienced horticulturists, after careful examination of the beds in full bearing, have estimated yields as high as 50,000 quarts to the acre. But the method involved a tremendous amount of hand labor, which is a drawback when operations are to be conducted on an extensive scale.

By this old system, strongly rooted plants were set in beds five rows wide, just one foot apart each way, each plant thus occupying one square foot of space. The spaces between the beds were wide enough for a man to get through comfortably in doing the work. From these spaces, he could reach to the middle of the beds in hoeing and in picking the fruit, so he need never set foot in the beds. The runners are all kept off and the beds absolutely free from weeds. By this means, great strong-rooted stools are formed which go on producing year after year. Of course, fertilizers are applied, and the beds are mulched in the fall. So long as fertility is maintained and the plants are kept vigorous and in good health, so long may one expect good crops of fruit. One quart to the hill is a modest estimate with a good yielding variety, and I have seen hills of the Glen Mary that would produce much more. This is certainly intensive culture. But to keep off all runners and cultivate entirely by hand requires much labor—a commodity not over-plentiful in the market, and costing much money. For the amateur with a small area, and able to give constant attention, it is a very good method.

Now for the New System

WHAT Mr. Kevitt calls his "new system" requires more plants to a given area, but arranges them differently so that a wheel hoe or hand cultivator may be used, and hand labor be reduced. In the new system, the rows are two feet apart, and three plants are set to each foot of row. This is pretty close setting. The plants may be potted or layers, and be set in late summer or fall. The photograph shows a field, set November 15th last, as it was on June 23d. The plants

were carrying a heavy crop of fruit, and Mr. Kevitt estimated the yield at 10,000 quarts per acre which, I think, was conservative, if a good proportion matured. Double this yield is expected the second year. Here certainly a crop is produced with a minimum of labor. *It receives no cultivation till after the first crop is gathered.* After setting, at any time before freezing weather, the rows, not the spaces between, are covered to a depth of three inches with coarse, strawy manure, swale hay or any good mulch, as a winter protection. As soon as the plants show life in the spring, the mulch is raked off the plants, but left close around them. After fruiting is over, they are cultivated and kept clean. The spaces are wide enough to allow the use of a hand cultivator. For continuous fruiting, the runners should be kept off; but, if new plants are desired, some may be allowed to grow. But no plant except the strawberry must be permitted. The commercial fer-

mends rows three feet apart and plants one or two feet apart in the rows.

The Glen Mary is the variety usually grown for market as it is strong and vigorous in plant, a heavy bearer of large, handsome fruit that ripens through a long season. Mr. Kevitt says that in more than 20 years' experience and testing more than 100 varieties, he has never fruited any variety from which he has realized as much money. There are varieties of better quality which are preferable for the home garden. Of these, the Chesapeake is one of the best though a little weak in plant.

Mr. Kevitt had a "field day" June 23d (postponed from June 16th because of the lateness of the season) to give horticulturists generally an opportunity to inspect the results attained, particularly by his "new system." He also gave them the opportunity to pass upon the apparent merits and demerits of a large number of varieties of what he calls

"a new race of strawberry plants." These were the selections from 30,000 hybrid seedlings grown in 1913. Several of them appear to have much merit, but more than one—or two—seasons are necessary to prove the worthiness of a new candidate. This is shown by the fact that last year a number of horticulturists selected Beal as the best of these seedlings, while this year several others appear more promising than that variety. Not only is more than one season required, but tests on a variety of soils and under varying climatic conditions are necessary. The present season's weather conditions are classed as very unfavorable.

A Look at Some Novelties

AMONG these new hybrid varieties which some of the visiting horticulturists preferred to the Beal, are the Seitz, of a rich red color inside, with a strong vigorous plant growth; the Lobb, good but soft; Von Hindenburg, which was preferred by one old market grower to any other; Frey, a finely colored dark berry; Davis, medium but of uniform size, heavy bearer, large hull, color good, made a most favorable impression; Runyon which showed up well.

The ideal strawberry plant must have strong vitality to carry it through adverse as well as favorable weather conditions; must have a mass of long, fibrous roots that go deep for moisture and plant food; must produce a large number of fruit crowns that send out strong fruit stems to sustain the load of fruit; must be perfect-flowered; must have strong and abundant foliage to protect the fruit as well as to maintain the vigor of the plant; must send out strong runners to reproduce its kind.

The fruit must be borne abundantly, be of a good bright red color, even the inside, firm in flesh, sweet and luscious, and of aromatic flavor. For home use, a lack of firmness may be excused if superior quality be present. Possibly some one of these new seedlings may be the ideal for which we are looking—possibly!!



Strawberries grown by the "new system." Set out November 15th, photograph made June 23d. Variety Glen Mary

tilizer used is dried blood and bone. The essentials of this system are:

- (a) Fertile soil well filled with humus.
- (b) Strong, well-rooted plants.
- (c) Protective mulch during winter, to be kept around the plants during summer to conserve moisture, keep down weeds and keep the fruit clean.
- (d) Moderate application of a suitable commercial fertilizer.
- (e) Frequent and thorough cultivation during summer.

See the Possibilities in This System?

WHILE it may be as well to set the plants a little earlier, they may be put out after almost any crop is off in the fall, a crop of fruit be gathered early the next summer, and if desired, the ground plowed and late corn, cabbage, or other fall-maturing crop be grown. Of course, after a strawberry bed is well established, it would be more profitable to keep it producing year after year. But the securing of the first crop before any cultivation is required, gives a good margin of profit on the start.

For horse cultivation, Mr. Kevitt recom-

Saving Labor in Land Cultivation

FRANK E. GOODWIN
Missouri

TRACTORS FOR GARDEN USE, THEIR POSSIBILITIES AND LIMITATIONS FOR GENERAL CROPS WHEN LABOR IS SCARCE

THE urgent appeal of the Administration for largely increased acreages of food crops was wonderfully responded to by a vastly greater army of volunteers than will be called to the colors. Within a few days after the Call to the Farms, millions of acres hitherto used for parks, lawns and ornamental gardens were scarred deep with the plow, and the deep scars were smoothed with harrows, and dedicated to the production of "things to eat."

The successful production of food crops requires fertile soil, a properly prepared seed bed, seed endowed with strong vitality, and work. Once the young vegetables have pushed their tender leaves above their earthy bed, they must have constant care to bring them to maturity in profitable quantities to repay the gardener for his outlay of time and effort. The most perfect seed bed, planted with carefully selected seed of greatest possible vitality, and started under ideal growing conditions will repay only with losses if frequent weeding, cultivation, and spraying are overlooked.

When the crops have ripened they must be harvested at the proper time—neither too early nor too late; in weather that is neither too damp nor too cold.

Summed up in a word, the successful, profitable growing of food crops depends most largely upon labor.

The urban dweller, depending upon his own individual efforts, may bring a quarter acre garden to maturity by devoting an hour morning and evening, and all of Saturday afternoons to his task. If he is the father of a couple of half-grown boys he may increase this to half or three quarters of an acre. One man steadily employed as caretaker of a small estate may, with the owner's



The old way and the new. The small gasoline driven machine designed to supplant the horse in cultivating moderate-sized areas

assistance, make an acre garden. But above an acre competent labor must be employed.

Where is labor, skilled in crop growing for pleasure and profit, to be obtained? A million able-bodied men are called to arms. The farms require an army of laborers to make and market the commercial crops. The speeding up of factories furnish employment for all who will work. Competent help is scarce and will grow to greater demand when the Government is well started in filling its requirements. Where, then, shall the grower of food crops look for relief?

The small farm tractor—humble brother to the pleasure automobile.

Necessity, mother of invention, gave birth to the farm tractor for general use but a few years ago. True steam tractors came into limited use shortly following the Civil War, but these we will pass over with this brief mention.

The internal combustion engine, fed with gasoline, which made the automobile, the motor boat, and the aeroplane possible, also became the heart of the farm tractor. And while to-day gasoline flows through the main arteries to the heart of this powerful machine, kerosene is fast replacing gasoline as fuel, and distillates are used in very limited quantities.

The power of the motor is directed to wheels or "crawlers" by reducing gears. The wheels furnish support for the mechanism and give traction to the machine so that it becomes the motive power which draws the plow, harrow, cultivator, and harvester upon the land. A separate gear engaging at the will of the operator, supplies power for belt-operated machinery while the tractor stands at "parade rest."

While more than 100 firms are building farm tractors in considerable or small numbers, one can count upon the fingers of one hand the tractors which are adaptable for the farm of 50 acres or less. A great majority of tractors are

designed to serve farm owners whose acres number from 120 acres to as many thousands. The choice of tractors which may relieve the burdens of the man with few acres is restricted to three or four makes of machines, each of which is vastly different from the other.

Up to this time, and probably for some years to come, it has been necessary to build tractors of heavy weight to provide tractive power sufficient to pull the implement or tool for work in the field. In almost every case it has required half of the motor's power to move the weight of the tractor itself. Thus it is that a tractor, operated with a motor of ten rated mechanical horse-

power, will only provide five rated horsepower at the drawbar—the mechanical term of denoting the pulling power of the tractor.

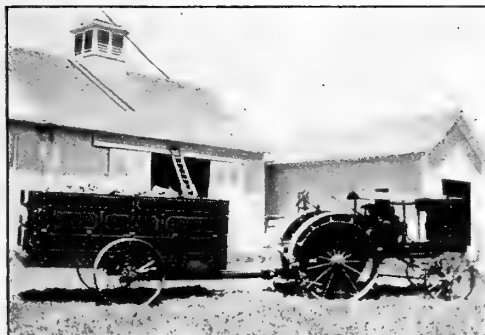
But it must be distinctly understood that rated horsepower is not the same as animal horsepower. A tractor rated at five horsepower at the drawbar and ten at the pulley or belt, will not perform the same work that five horses will, for the reason that the tractor's rating is its maximum, while the horse itself has great reserve strength.

Thus the 10-5 tractor will perform about the same work that two average horses will under most conditions. Its cost will be about the same.

Owing to the very limited number of tractors which will attract the attention of owners of small tracts of 50 acres and under, the reader need not consume much time in looking over the market if he decides he can use a tractor with profit to his "farming" operations. His only concern need be which of the few he can most profitably add to his equipment. At the



Rocks can be moved, stumps pulled, and ground cleared by a machine of this type. Useful for heavy construction work.



For hauling loads around the grounds. The engine-driven machine is always ready and needs but little attention when not in use.

beginning he should ascertain how many horses he would require to do his work, and select a tractor whose cost will be approximately the same.

If the land owner is a "one-horse" man, and his acres are small in number, then he will require nothing larger than a garden tractor. This is a walking engine; the operator being obliged to trudge along behind it, on foot, as indeed he would if he employed a single horse.

Such a tractor will not "break" the land with the plow, even though it has been under cultivation for years. Plowing will necessarily be done by horse, as heretofore. But it will cultivate the garden spot and do it even better than the horse, and is always ready for its tasks. It will keep the ground well stirred and should, under most conditions, serve the owner well. When not employed in the field it can be used to supply power for operating a small electric light plant, a grindstone, pumping jack, cream separator, churn, or other small machinery on the place.

Another type of tractor costs the same as a good team of two horses, and will do the same amount of work. It will pull a single plow, and cultivates one or two rows at one operation. Its drawbar pull is sufficient to operate small harvesting machinery, and when belted up to power-driven machines in the home and in the outbuildings will do more than horses can be expected to do. Its uses are practically the same as those of a strong two-horse team, and will give the same degree of profitable satisfaction as that number of horses.

A larger type of farm tractor is adaptable for the place which requires from four to five horses to do the work when all are employed in a single operation. It is recommended to pull two plows of 14 inch bottoms each—the gang plow which large farmers use. It will easily cultivate two rows at one operation, and continue cultivation as long as it is needed. Heavy power-driven machinery can be operated by the pulley, and as a road tractor, pulling two or three trailers, or wagons, it gives excellent service.

Many other tractors are manufactured for large farm use, but as most of these are not adaptable for cultivation purposes none of them will be described.

Tractors are as well made as automobiles, and are as little liable to disabilities as the motor car. They are fairly "foolproof," and in the hands of a person with average mechanical ability will give good service at moderate cost.

The man with little or no love for machinery should not be given charge of a tractor.

There are certain things which the tractor operator must learn and observe. It will not operate without fuel, lubricating oil, and water in the cooling system. In all respects it is practically the same as an automobile. To be kept in good condition it must be given average mechanical care and attention. Being mechanical it will wear out, and the wear will depend largely upon the care and skill of the operator. Fortunately for the readers who may purchase tractors, there are but few suitable for their purposes, and these are all manufactured by reputable concerns.

In contemplating the purchase of a tractor to replace or relieve horses, it would be well to compute the cost of the tractor and its operations, and compare with the cost and keep of horses to be replaced.

The tractor requires no feed nor attention while idle. It can be operated 18 or 20 hours in 24 if required. No rest is necessary after it has been in the field a few hours. In the hottest sun it goes about its work without danger of being overcome with heat. It is ready to start at command, without having to be fed and curried. It requires no more time to attach an implement to it than it does to harness a horse. It may "take sick" and so may the horse. At such times the expense of an expert is no greater than that of a veterinary.

The fact that one does not have to maintain a number of acres to provide food for the tractor while it is in use, or idle, is a good argument in its favor. Its "feed" can be purchased from a tank wagon, or in barrels from the nearest oil dealer, and it never requires a change of food stuff.

On the other hand, the tractor produces no progeny; nor will it respond with loving notice to a caress from its owner or the women. It is a machine, dumb and without life except that which its operator puts into it. It will intelligently obey every command when properly cared for and operated, and will stand at attention where it is left until its owner requires it to go again.

In closing it might be well to remind the reader that the tractor is not a dream but an actuality. It has been thoroughly tested and tried and found not wanting. It is endorsed and recommended by agricultural experts, state boards of agriculture, and users themselves. It is a practical machine, and under most conditions has proven profitable and a

wise investment. To some it will prove disappointing, and its advantages and disadvantages should be well weighed before the check is passed over for payment. If a tractor is bought, be certain that it is put to work doing everything that it is made to do.

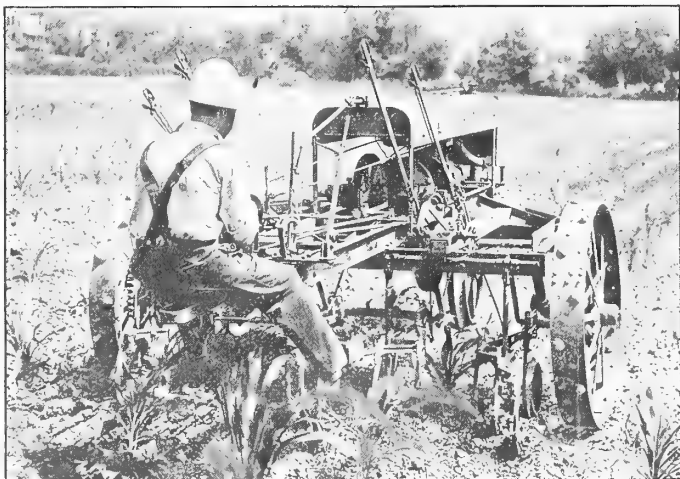
The cost of small tractors, such as have been described in the foregoing, have been calculated at the price of good, sound horses which they are intended to replace. Equipment is additional, as it would be if horsepower is employed.

The Beeman garden tractor, smallest of all the power appliances, sells at \$150, f. o. b. factory. It develops 4.9 horsepower at the belt, and about 2.5 at the draw bar. Attachments, such as cultivators, weeders and turning shares to equip the tractor will cost about \$25 aggregate. The company issues a circular telling of attachments which can be used in connection with the machine.

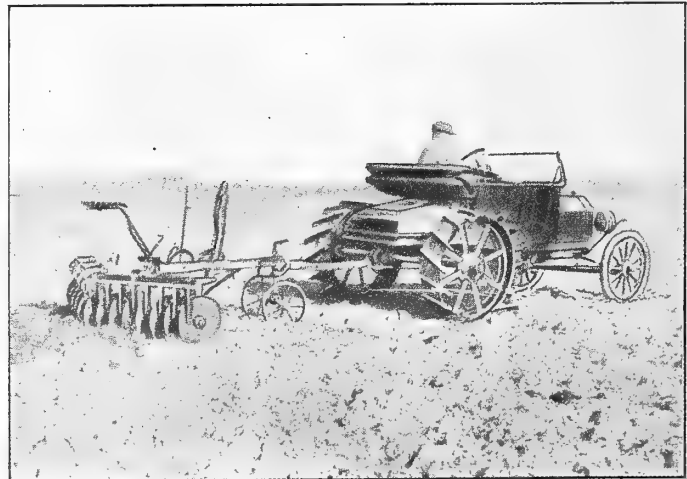
The Avery motor cultivator was and is intended primarily for cultivating large fields of corn, potatoes, and other crops which are planted in rows or drills. It has been found adaptable to operating planters of both the corn, cotton, and combined corn and cotton types. This tractor is not built for plowing, and is not furnished by the company for that purpose. The writer believes that it can be used for plowing gardens, with a hitch which will operate a sulky plow, although I do not have permission from the manufacturers to so assure your readers.

This motor cultivator will successfully operate a small harrow, and ought to do much of the work of the gardener. It sells for \$400, equipped with eight or twelve shovel gangs. Next season it will be equipped with disc gangs also gangs for cultivating listed corn, and a planter attachment. All other tools which the user may wish to operate as his experiences will teach him he can, must be purchased separately.

The Universal tractor is a real farm tractor in every way. Its cost is \$850 complete with plowing outfit of two 14-inch bottoms. It is a powerful machine, and besides doing everything possible for a tractor to do on a farm of 100 or even more acres it will supply belt power which will enable it to replace a ten or twelve horse portable gasolene engine. This tractor has never been recommended for gardens, but if the fields are sufficiently large so that it requires six or eight horses to properly care for them, it will be found profitable.



Gasolene driven machines are available for planting and cultivating corn as well as other crops



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A Catalogue with a Conscience

Offers such kinds of plants, roots and bulbs only, as have measured up to the highest standards of the most critical trade. I replace anything that is not thoroughly satisfactory. On that basis I solicit your orders for above Irises and your request for the free catalogue.

RALPH E. HUNTINGTON
Painesville Ohio

Horsford’s Cold Weather Plants

You can begin setting hardy plants in August. The earlier kinds will have time to get established before winter. Don’t put off planting, but send at once for Horsford’s Spring Catalogue and Autumn Supplement of bulbs for fall setting. Many of the wild flowers such as Trilliums, Dog’s Tooth Violets, Lilies and other Violets may be set in September. Paeonias in last of August.

Write for Catalogue N

F. H. HORSFORD, CHARLOTTE, VT.

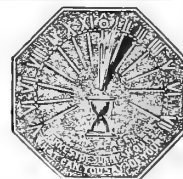
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Real Bronze Colonial Designs
From \$3.50 Up

Also Bird Baths, Garden Benches, Fountain Sprays and other garden requisites.

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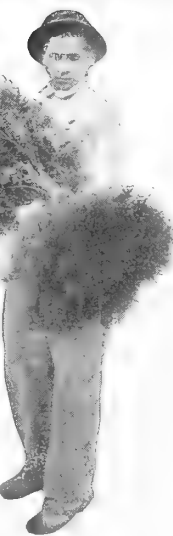
Send for illustrated Price-List



Evergreen Trees and Evergreen Shrubs for August Planting

ALONG your foundations. In your veranda corners. Out on your grounds. Wherever sure results are absolutely essential, plant Bay State evergreen trees and shrubs. They will insure you of sure results because of their backbone. Backbone developed by our severe New

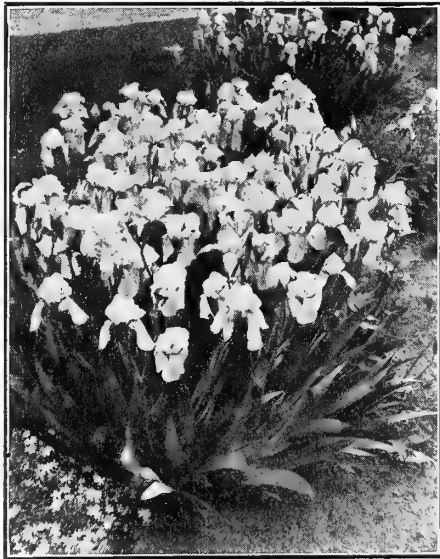
England Winter. Backbone that gives them the stamina to stand transplanting and thrive satisfactorily practically anywhere. Backbone that enables them to scoff at Winter’s winds and frigidness. If this backbone kind of stock appeals to you, send for catalogue and claim a share of it for your own!



The fibrous vigor-giving rootlets of Bay State stock, are a big backbone-factor.

The Bay State Nurseries

672 Adams Street
North Abington, Mass.



Tall Bearded Iris

For Immediate Planting

Five New Kinds of Rare Beauty

Isoline (Squalens)

Standards, soft pink; Falls, deep old-rose, yellow throated; very large and striking flower. Award of Merit, London. **\$1.25 each.**

Lohengrin (Pallida)

Standards and Falls, in shades of Cattleya-Mauve; petals translucent and very responsive to strength or softness of the light. 3 ft. Award of Merit, London, 1915.—**\$1.00 each.**

Mrs. Alan Gray

(Cengialti X Queen of May)

Standards and Falls, soft lilac; one of the most beautiful; unique in usually blooming again in late July and August. 2½ ft. **\$1.00.**

Rhein Nixe (Amoena)

Standards clear white; Falls rich raspberry purple with distinct white edge. Tall, vigorous branched spikes; 3½ ft. Award of Merit, London, 1915. **50c each.**

Storm Cloud (Squalens)

Standards pale dove gray, Falls deep violet; very large and handsome; 2½ to 3 ft. **\$1.00 each.**

Special Offer

One plant each of the above varieties, delivered to any address in the United States, Prepaid, for **\$5**

Our list of standard varieties while not one of the largest, is the most select in the country. Catalogue containing full descriptions forwarded to any address on receipt of address.

These Iris are sold under our usual guarantee of being absolutely true to name or replaced free of charge

Charles H. Totty

"The Novelty Man"

Madison

New Jersey

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in August

(Following dates are meetings unless otherwise specified)

1. Minnesota Garden Flower Society at Como Park, St. Paul, by announcement.
2. Marshfield, Mass., Garden Club.
Garden Club of Lawrence, Lawrence, L. I. Subject: Sweet Peas and Lilies.
3. Pasadena, Cal., Horticultural Society.
4. New York Botanical Garden, Bronx Park, N. Y., Lecture: Floral and Scenic Features of Cuba.
6. Lenox, Mass., Garden Club.
7. New Bedford, Mass., Horticultural Society.
Lake Geneva, Wis., Gardeners' & Foremen's Association.
- Garden Club of Pleasantville, N. Y.
8. Short Hills, N. J., Garden Club.
- Lenox, Mass., Horticultural Society.
- Nassau Co. Horticultural Society, Glen Cove, L. I.
10. Westchester N. Y. & Fairfield Conn. Horticultural Society.
11. New York Botanical Garden, Bronx Park, N. Y. Lecture: Books on Gardening.
- Dobbs Ferry, N. Y., Horticultural Society.
- 11-12. Massachusetts Horticultural Society, Boston, Mass. Gladiolus and Phlox Exhibition.
13. Park Garden Club, Flushing, L. I.
Rochester, N. Y., Florist Association.
New Rochelle, N. Y., Garden Club.
New York Florists' Club, New York City, N. Y.
16. Marshfield, Mass., Garden Club.
17. Pasadena, Cal., Horticultural Society.
California Dahlia Society, San Francisco, Cal.
18. New York Botanical Garden, Bronx Park, N. Y. Lecture: Trees and Flowers of the Yellowstone National Park.
20. Lenox, Mass., Garden Club.
- 21-23. Thirty-third Annual Convention and Trade Exhibition of the Society of American Florists. Grand Central Palace, and Botanical Garden, N. Y.
- 23-26. American Gladiolus Society, Syracuse, N. Y. Annual Meeting and Exhibition.
Horticultural Society of New York, New York City, N. Y. Exhibition and Lecture.
New York Botanical Garden, Bronx Park, N. Y. Exhibition of Gladioli.
25. Dobbs Ferry, N. Y., Horticultural Society.
New York Botanical Garden, Bronx Park, N. Y. Lecture: Insect Enemies of Plants.
27. Park Garden Club, Flushing, L. I.

Great Horticultural Meeting in New York

THIS year sees the Thirty-third Annual Convention and Trade Exhibition of the Society of American Florists in New York. There are two phases of attraction to the public: The regular trade exhibit which will be held in the Grand Central Palace, New York City, August 21st to 23rd, where also the principle sessions of the Society will take place. Simultaneously there will be the Convention Garden for which purpose the attractive location has been accorded by the Director of the New York Botanical Garden in Bronx Park. The display here consists of exhibits of growing plants established well in advance of the Convention and which form a more or less permanent display.

The accompanying map shows definitely the location of the various exhibits, and by reference to the key numbers the visitor can readily ascertain the nature of the various displays. In conjunction with this organization there are also meetings of various affiliated associations, and in particular the Annual Meeting and Exhibition of the American Gladiolus Society, when the exceptionally valuable prize list is offered in this division.

The garden lovers visiting New York during the period of the Convention will be amply repaid by a visit to the Convention Garden as

they will there see a demonstration in growing specimens naturally planted of many of the novelties of plants and flowers in season.

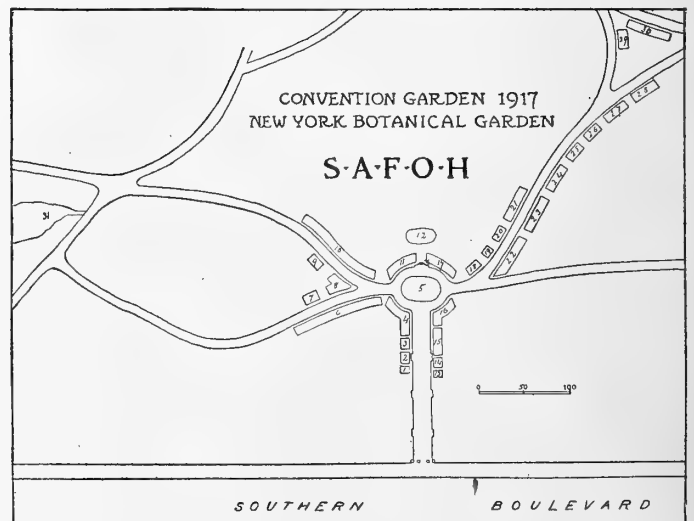
Further particulars concerning the National organization can be obtained from John Young, Secretary, 53 West 28th Street; in connection with the Gladiolus Exhibit from Henry Youell, Cedar Street, Syracuse, Secretary of the American Gladiolus Society.

A map of the Convention Garden is given herewith, the number references to the exhibits being as follows: 1, B. Hammond Tracy, Gladiolus—2, Vaughan's Seed Store, Gladiolus—3, B. Hammond Tracy, Gladiolus—4, John Lewis Childs, Gladiolus—5, Conard & Jones Co., Cannas—6, A. N. Pierson, Inc., Phloxes—7, 8, 9, do., Roses—10, do., Phloxes—11, Arthur T. Boddington, Cannas—12, Vaughan's Seed Store, Cannas—13, B. Hammond Tracy, Gladiolus—14, Vaughan's Seed Store, Gladiolus—15, B. Hammond Tracy, Gladiolus—16, Arthur Cowee, Gladiolus—17, Arthur T. Boddington, Cannas—18, John Lewis Childs, Lycoris squamigera—19, Raymond W. Swett, new seedling Dahlias—20, American Bulb Co., Cannas—21 to 27, Vaughan's Seed Store, Cannas—28, W. A. Manda, miscellaneous plants—29, Thos. Meehan & Sons, Mallows—30, Bobbink & Atkins, Mallows—31, Wm. Tricker, Aquatics.

Rose Garden for Portland, Ore.

AGROUP of people representing ninety-nine different organizations of the city, including the Royal Rosarians, the Portland Rose Society, the Portland Chamber of Commerce, the Portland Floral Society, The Rotary Club, the Research Club, the American Institute of Architects, the Parents' and Teachers' Association, met January 11 and organized a Portland Association National Rose Test Garden. The coöperation of the city government comes through its Park Department.

The Rose Test Garden is part of the propaganda of the American Rose Society and at a



meeting on February 8th it was officially accepted as the test garden for the Pacific Northwest and with the local organization appointed Mr. Currey, Mr. Clark, and Mr. Tucker, which committee together with the Portland Association and the City Government of Portland will formulate plans for the location and government of the garden and provide rules and regulations for all tests and contests.



**THE GLEN ROAD
IRIS GARDENS**

Wellesley Farms, Mass.

list only New Introductions and the finest Standard Varieties.

**Hardy Guaranteed
Trees and Plants**

We guarantee our trees to make the growth the planter has the right to expect. This means: You plant our trees properly, give them due care and attention, and then if any of them fail to grow as you have reason to expect, we will replace them without charge. You are the judge of what you should expect.

"Inside Facts of Profitable Fruit Growing" and "How to Beautify Your Home Grounds" sent prepaid for 10 cents each.

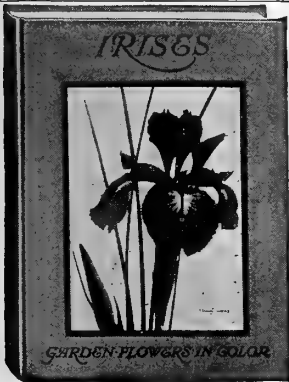


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Box 498, *Stark City Mo.*

PEONIES

Fifteen fine named Peonies for \$2.50, or 25 for \$5.00, all different and truly labeled, a chance to obtain a fine collection at half price, comprising such varieties as Festiva Maxima, Delachei, Achillea, Lady L. Bramwell, Couronne d'Or, Prolifica Tricolor, Louis Van Houtte, and various other fine sorts. With any order of above for \$5.00 I will include one plant of Baroness Schroeder, free. I have the largest stock in America of Lady Alexandra Duff (absolutely true) and many other fine varieties. Send for catalogue.

W. L. GUMM, Peony Specialist
Remington, Indiana



WALLACE'S latest complete Illustrated Iris Booklet.

Now ready for distribution.

This limited edition will be mailed gratis upon request.

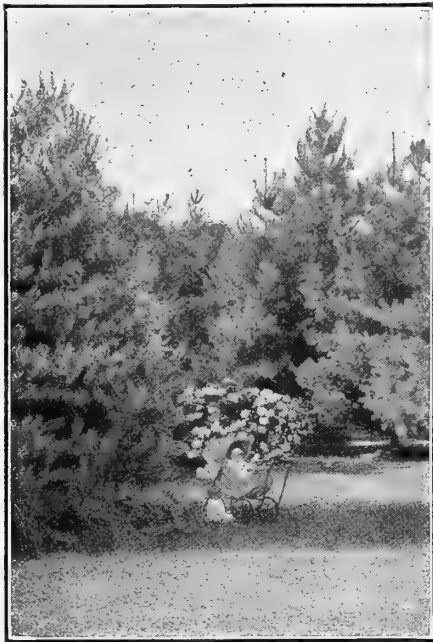
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SHADE AND PRIVACY
Around Your Home

There is no need that you should, for one single day, be without the comforting screen of big evergreens! Twenty years ago we decided to eliminate the waiting phase from home landscape making. With the help of Hicks Big Trees you can enjoy the blue sky, the white clouds and the cool breezes around your home this summer without being disturbed by sights, sounds and the dust of every passing automobile or by adjacent buildings.

Side Walls Suburban places of Europe are surrounded by high brick walls. We can give you walls that cost less and are more beautiful, a wall of fragrant Firs, Pines or other Evergreens. August is a good time to plant them. You can get the best selection of trees and you can arrange them while you are on your country place, while your gardener is not as busy as in the spring. Make the sidewall of your outdoor room an Evergreen Boundary. 6 to 16 feet tall.



Your family can have an evergreen boundary now

Our representative will call, help solve your tree problems and stake out your ground according to your ideas. Evergreens of the kind we offer may be shipped safely a thousand miles. Our stocks embrace all sizes. It took us twenty years to get them in shape for you.

Satisfactory growth is guaranteed, since our trees have been so thoroughly prepared that records show almost no loss, making free replacing necessary.

Write for free book, "Evergreens for Summer Planting"

Hicks Nurseries

"The Home of Big Trees"

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Westbury, L. I., N. Y.

Big Shade Trees

We will deliver and plant, within fifty miles of New York and anywhere on Long Island with the guarantee that they will grow satisfactorily, 2 Silver Lindens, 18 ft. tall and 2 Norway Maples, 20 ft. tall, all 8 ft. broad trees, 15 years old, that we will move in full leaf for \$50. You may pick them out yourself.

Because Hicks' Nurseries are famous for Big Trees do not think that is all we grow. We grow thousands of all sizes, from 100 up. Learn to look upon Hicks' Nurseries as your Plant and Tree Department Store. Complete nursery catalogue on request. Write us TO-DAY.

Fairfax Roses

Do you want an abundance of roses all summer? Then plant Fairfax Roses. They are grown slowly under natural conditions (not forced) will bloom the first season for you under ordinary care, and will be a constant delight for many years.

Book on request giving instructions as to the proper method of growing roses.

W. R. GRAY

Box 6 Oakton, Virginia

**Pot Grown
Strawberry Plants**

Plants set out in July and August will give a good crop of berries next season.

All the best Varieties; pot grown.

25 for \$1. 100 for \$3.50 by express

Descriptive Catalogue mailed free.

W. E. MARSHALL & CO.

Seedsman

166 W. 23d St. New York



*Any Carpenter
Can Erect It*

All construction questions are worked out, the material is cut-to-fit exactly, the plans are before him, and the owner knows he will get a perfect greenhouse; designed by experts, complete in every particular, and of best materials possible—all combined in

Callahan CUT-TO-FIT Greenhouses At Low Cost

They solve the question for the man who knows the advantages of under glass growing. In any size needed. Low freight classification helps keep the price down.

Callahan Sectional Greenhouses for your home may be erected by any handy man. Tell us your needs. We have a house for any grower, professional or amateur. Write for particulars.

THE CALLAHAN DUO-GLAZED SASH CO. 132 Fourth St., Dayton, Ohio

Wolcott's for Hardy Plants

Hardy Plants rule supreme with us. Because we cannot grow them all, we only grow those most dependable under all conditions of soil and climate. We endeavor to offer the newest and choicest of the dependable standards and every plant we sell is guaranteed true-to-name. Our greatest hobby is

Primroses to Plant this Fall for Spring Bloom

Among the rarer sorts, the following are particularly charming and suitable for immediate planting:—

- Beesiana**, purple with yellow eye, 75c. each.
- Bulleyana**, golden yellow, shaded orange, 50c.
- Capitata**, violet blue, dusted white, 50c.
- Denticulata**, very large lilac, 50c.
- "Red Hugh"**, exceedingly choice, fiery scarlet, \$1.
- "Mrs. Berkeley"**, pale blush with saffron eye, 75c.

Special Offer: We will send one strong plant of each of the above selected sorts for \$3.

A Booklet You'll Enjoy It is a very modest free booklet, but full of facts about our "pets," the choicest hardy plants the world affords. Grown under ideal, yet exacting conditions by people who love plants, Wolcott's Hardy Plants are different from the commercial product. Let our booklet and plants convert you into a hardy plant enthusiast. Write TO-DAY.

Wolcott Nurseries Jackson, Mich.

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Give 100% Satisfaction

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IRON FENCE protects lawns and flowers, increases property values, compels cleanliness. It keeps children safe from automobile speed maniacs and protects careful drivers from careless children. There are many imperative reasons why you need

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"The Standard of the World"

Write for our De Luxe Book of Modern Architectural Designs in Iron Fence, Gates, and Lawn Furniture. Exact styles to harmonize with special types of architecture found in modern residences, country estates, town houses, public and commercial buildings.

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The Stewart Iron Works Company, Inc.
655 Stewart Block CINCINNATI, OHIO
"The World's Greatest Iron Fence Builders"

Old-Time Southern Recipes

J. M. PATTERSON

THE work of food production still goes on, and this month every one should be busy preparing for their winter gardens, but there is much to be done for the preservation of food.

Because of the difficulty of getting the tin and glass containers other methods have been devised for the preservation of food and the Government had recently issued a bulletin on the subject of drying food stuffs. But our mothers and grandmothers had devised means for the preservation of food, and we are turning to them in our dilemma and are bringing to light a number of good old-time receipts.

Therefore if the tin cans and glass jars are reserved for the succulent vegetables, the others can be conserved by drying and may be packed in earthen jars or in tin or paste-board boxes lined with oil paper.

Dried Fruit

Begin drying fruits just as soon as the seed matures, or as soon as the fruit is two-thirds ripe, and continue as long as you can handle it without mashing to a pulp.

Caution—In drying either fruits or vegetables in the sun, screen wire or mosquito netting should be stretched over a suitable frame to keep out the flies and other insects; and everything, of course, must be scrupulously clean if a superior flavored, healthy and wholesome product is desired.

Dried Cherries. Stone the cherries and spread on dishes put them in the hot sun. (Look after them occasionally for fear of worms having been in some of the cherries. To safeguard against this put them in a hot oven for five or ten minutes.) (When dried sprinkle sugar on them and pack in stone jars.)

Peach Chips. Peel and slice peaches thin, boil them until clear in a syrup made with half their weight in sugar, lay them on dishes in the sun and turn them until dry. Pack them in earthen jars or tin boxes or cans with powdered sugar sifted over each layer. Should there be syrup left, continue the process with other peaches. They are very nice when cooked with pure honey instead of sugar.

There is an excellent old time receipt for the preservation of tomatoes called Tomato Paste.

Tomato Paste. Take perfectly sound and ripe tomatoes, scald and take off skins; put them in a colander to drain and pour off the thin liquor that drains from them. Press the tomatoes through a sieve. Put in a kettle and boil slowly until reduced to thick pulp. Spread this on large bread pans and either dry out in the oven or in a modern evaporator or in the sun until it is a stiff paste. In the latter case, be careful to cover all with cheese cloth or fine wire netting to keep out insects. This can be rolled in a sheet or cut in squares and kept in earthen jars, the tops tied over with a cloth, or in close tin boxes and cans lined with oil paper. If preferred the paste need not be dried, but can be put in wide mouthed bottles, after being boiled down thick, and sealed while hot.

This paste can be used in the winter for a number of things: by adding water, as seasonings for soup, or with bread crumbs for a baked dish, and as a basis for sauces.

Fruit Leather made of any kind of fruit is not only a delicious confection, but does not require sugar except in the case of very sour fruit, and if soaked in water several hours and cooked a few minutes can be eaten with cream or made into various desserts.

Strawberry Leather. Take thoroughly ripe strawberries, mash to a pulp, spread on platters and dry in the sun or oven; when dry, dust with powdered sugar and roll up like a jelly cake, cut into suitable sized pieces and pack away in jars. This may be eaten as a confection or soaked in water and used for pies, short cake, sauce, tarts, etc., etc. The powdered sugar is a matter of taste and may be left out if desired.

To dry strawberries put the berries in a moderate oven, heat through thoroughly, but not enough to become soft and juicy, spread out in the sun or finish in the oven. Treat blackberries and dewberries exactly the same as recommended for strawberries. If a seedless roll is desired, this may be done by pressing the pulp through a fine sieve before drying.

Peaches, Pears, Apples, Plums, and Quinces or any fruit can be made into leather in the above manner and either rolled in sugar or cut in squares and put away in tin boxes or cans which are lined with oil paper.

Next month we will continue the subject

Protect the Growing Things

Now, while they are at their best, is the time to give them the necessary protection that preserves their beauty and lengthens their life. Guard them with

EXCELSIOR
RUST PROOF

FENCES, BED-GUARDS

trellises, tree-guards, etc. Made of extra heavy steel wires, held tightly together by patented steel clamps. Heavily galvanized AFTER making, which prevents rust.

Ask your hardware dealer Write us for catalogue B



WRIGHT WIRE CO.
WORCESTER MASS.

Plant Evergreens Now

DON'T wait till next Spring.

August and September are ideal months.

Good full rooted, plump topped trees cost so little more than poor ones, why not have them?

Send for Evergreen Help Hint Booklet.

Julius Reehrs Co

At The Sign of The Tree
Box 10, Rutherford N.J.

PLANT IRIS

this fall, and you will have vigorous clumps and strong blooms next summer. Our beautiful collection is one of the largest in America and comprises over 150 varieties. Send for catalogue.

THE WING SEED CO.

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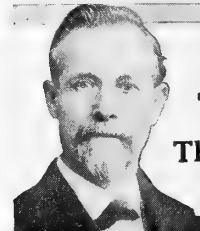
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GERMAN IRIS

12 choice varieties including Aurea, Darius, Exquisite, Florentina, Johan de Witt, Pallida dalmatica, Queen of May and others equally choice for \$1.00. 25 in 25 varieties for \$2.00.

Send for list of Iris and Peonies

Geo. N. Smith, Wellesley Hills, Mass.



For Safe Tree Surgery

The Davey Tree Expert Co.
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Davey Tree Surgeons

Potted Strawberry Plants



DREER'S Mid-Summer Catalogue

offers the best varieties and gives directions for planting in order to raise a full crop of Strawberries next year; also offers Celery and Cabbage Plants, Seasonable, Vegetable, Flower and Farm Seeds for summer sowing, Potted Plants of Roses, Hardy Perennials, and Shrubbery which may safely be set out during the summer; also a select list of seasonable Decorative Plants.

Write for a free copy and kindly mention this publication

Henry A. Dreer
Philadelphia, Pa.

EVERGREENS—An Investment



Uniform Prices for Austrian and Scotch Pines, as follows:—

2 to 2½ feet tall, each \$1.00; \$9.00 for 10
2½ to 3 feet tall, each \$1.25; \$10.00 for 10
3 to 4 feet tall, each \$2.50; \$17.50 for 10

All symmetrical specimens, carefully dug and packed with large ball of earth. Safe arrival in good growing condition guaranteed.

Annuals are good, perennials are better, but evergreens are best and we have never met a man who could dispute this. Properly selected and carefully planted evergreens serve generations. They are highly ornamental 365 days in the year and each year sees them increase in beauty, usefulness and value.

Plant Them NOW!

August transplanting is an assured success when our oft-transplanted, carefully nursed and root-pruned specimens are used. Practical suggestions which kinds to choose for different purposes and thorough instructions how to plant them yours to command in a Free Treatise.

Austrian Pine, Scotch Pine

For exposed hillsides or slopes, few evergreens equal *Austrian Pine* (shown alongside) in usefulness. Very beautiful when adorned with new growth. *Scotch Pines* are even more rapid growers than *Austrian Pine*, equally hardy and ornamental.

Besides treatise mentioned above, our free catalogue is at your disposal. It presents the cumulative experience of over a century in the nursery business. Describes as complete and perfect a stock of evergreens as ever grew in 800 acre nurseries. Please ask for it.

AMERICAN NURSERY COMPANY, Inc.
800 Acres—at Flushing, L. I. and Springfield, N. J.
Sales Office—Singer Building, N. Y.

DUTCH BULBS are coming!

The Quality of "Diamond Brand" Bulbs of 1917 crop promises to be superfine! We are not so sure about the Quantity, but hope enough will reach us to go around.

Special Offer:—To popularize the giant-flowering *DARWIN TULIPS* we will mail 12 blooming bulbs each of *CLARA BUTT*, clear salmon pink, *PRIDE OF HAARLEM*, deep rose shaded scarlet and *GRETCHEN*, very light salmon, 36 fine bulbs in all, postpaid for **\$1**

FREE:—*Treasures of Bulmland* describes the choicest Hyacinths, Tulips, Daffodils, etc. Delivery in September. Write for your copy TO-DAY.

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SPRINKLERS for Every Need

Simple, compact and effective "rain-makers" that do good work under all conditions. Let them help you make your gardens bountiful and your lawns beautiful.

AT SMALL COST

There are four types, each made in several sizes. \$6.85 will buy a perfect "Border Mist" Junior Sprinkler. A "Garden Rain" Machine at \$15.75 provides as complete an outfit as one may wish. We guarantee every sprinkler. Write for descriptive folder—free.

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MOON'S SHRUBBERY

Softens the angular lines of house foundations, increases the intrinsic value of the home, besides the pride afforded in beautifying your property. Ask for Catalogue No. A. 3

THE WM. H. MOON CO., Nurserymen
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You Can Grow Vegetables, if you read Vegetable Lore

By Maurice Fuld

A NEW monthly magazine devoted exclusively to the subject of "Vegetable Gardening by the Amateur."

Just the information you need to make your little garden successful.

Subscription \$1.00 per year
Sample copies mailed free

MAURICE FULD, 1457 Broadway, New York

POT-GROWN STRAWBERRIES

OUR PLANTS give a crop of finest berries in two to ten months from planting—the Everbearing varieties in two months; the others the following June. A full list of the best varieties, including the remarkable **Van Fleet Hybrids**, covering the whole season from earliest to latest.

Our booklet No. 2 of Pot-Grown Strawberries tells all about them; how to prepare the ground and cultivate. **IT IS FREE.** If you would have bigger and better strawberries than your neighbors or you have ever had before, plant **LOVETT'S POT-GROWN STRAWBERRY PLANTS.**

Strawberry Specialists for thirty-nine years. **J. T. LOVETT, Box 125, Little Silver, N. J.**

Stump & Walter Co's Timely Topics

Let us turn, for the moment, to that side of gardening appealing to the mind rather than to the more material senses. The response to our previous appeals for more and bigger and better vegetable gardens has been gratifying. But, so long as there are gardens, so long will we have flower beds that help brighten the world and cheer our lives. So, this month, let us call attention to

Flower Seeds for Present Planting

August is the month of the year to start Perennials from seeds. Perennials are those flowers that are perfectly hardy and come again year after year. You will find two pages full of them described in our Mid-Summer Catalogue, offered free below.



S. & W. Co's. Giant Pansies

Sown during August, will live through the winter with but slight protection. Wintered over in a cold frame they will begin to bloom early in March. Outdoors in beds, they begin to favor us with glorious flowers, 2½ to 3 inches in diameter, from early in May until real hot weather. Try these:
Giant Winter Mixed, for early flowers in frames. *Pkt. 25c.*
World's Best Mixture, finest we know. *Pkt. 25c.*
Masterpiece, grand strain with frilled flowers. *Pkt. 25c.*

Bulbs to Plant NOW!

For August planting in pots, for house culture and Christmas flowers, try:

Freesia, Purity, the delightfully fragrant favorite, mammoth size, *Doz. 60c.; \$3.50 per 100.* Plant six to twelve bulbs in a 6 inch pan.

Roman Hyacinths, the earliest of all to bloom and easiest to grow. White. *\$1.25 per doz., \$8.00 per 100.*

Narcissus, Giant Paper-White, fine for growing in water, with pebbles to support bulbs. **Large Bulbs**, 5c. each; 50c. per doz.; *\$2.75 per 100.* **Jumbo Bulbs**, 10c. each; 75c. per doz., *\$3.50 per 100.*

For planting direct into the garden:

Madonna Lilies (*Lilium candidum*), choice, northern grown bulbs, sure to thrive and hardy as oaks, mammoth bulbs, 15c. each; *\$1.50 per doz., \$10.00 per 100.* All prices postpaid.

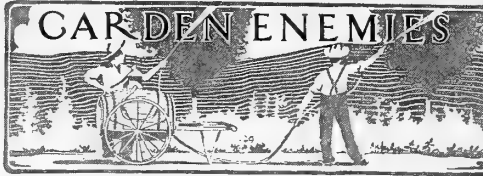
Seasonable Suggestions for the Vegetable Garden

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Spraying Kills Young Squash Bugs

THE common squash bug, sometimes called the black squash bug to distinguish it from the striped squash or melon bug, is a serious pest in gardens at times. A farmer recently related to me his experiences in attempting to grow not only squashes but melons and other cucurbits. He claimed that these bugs utterly destroyed his crop for him so that after several attempts he had given up growing these particular vegetables.

The squash bug is a menace from the time the plant appears above ground until the crop is harvested. The newly started plant is attacked by the adults which have wintered over. The damage done by the squash bug is this: they are sucking insects extracting the plants' juices for subsistence, and wherever the bug punctures a leaf to feed, it injects a little fluid supposed to be saliva which is poisonous to the plant, killing the leaf about the puncture. For this reason it is more serious on young plants than on old ones because of the fewer leaves. It is not uncommon to find young plants killed by a few punctures.

The squash bug is a hard insect to fight. Poisons will not do the work because it does not chew. The adult beetles are almost impossible to reach by spraying, handpicking and trapping them being about the only methods of destroying them. I have always managed to prevent serious damage by laying shingles about the garden where the squash bug is working. They will gather on the under side, particularly on cool fall nights, and if the garden is visited early in the morning they can be scraped off into a pail having kerosene in it. Destroying vines after the fruit is gathered is also a very material help in keeping down the pest.

The young can be killed by spraying the vines with kerosene emulsion, diluting the stock solution with eight to ten parts of water. The time when the young are present varies with the latitude. The adult appears in this latitude late in June and commences to lay eggs very shortly. It takes the eggs from eight to thirteen days to hatch, so that the young appear early in July. As soon as they appear spraying should be resorted to.

Where this squash bug bothers melons or cucumbers, a trap crop of early squashes planted alongside of the melons will prove far more attractive to the bug, so that little or no damage is done to the melons.

Repellants are sometimes used and with success. Land plaster or gypsum saturated with kerosene or turpentine makes a combination that the squash bug does not care to associate with.

Penna. _____ H. CLARKE.

WHERE radishes, mustard, cress, cabbage, or other plants of the mustard family have been growing early in the season or last season use carrots, beets, celery, or some other crop of a different plant family. The mustard family is subject to a disease called club which lives in the soil and often does serious damage when plants of the family follow each other closely.

"How to Grow Roses"

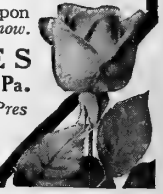
A delightful handbook for rose lovers. Tells how to plant, prune, spray, etc. Editor Barron of the *Garden Magazine*, says: "The book is a very thorough round-up of what the amateur wants to know about roses." Library edition, 121 pages—16 in natural colors.

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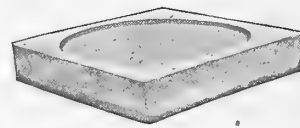
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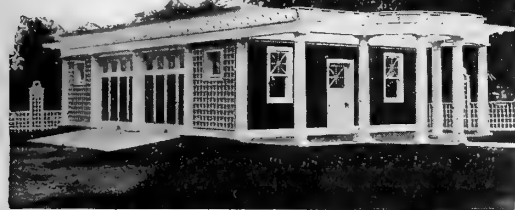
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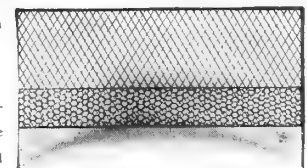
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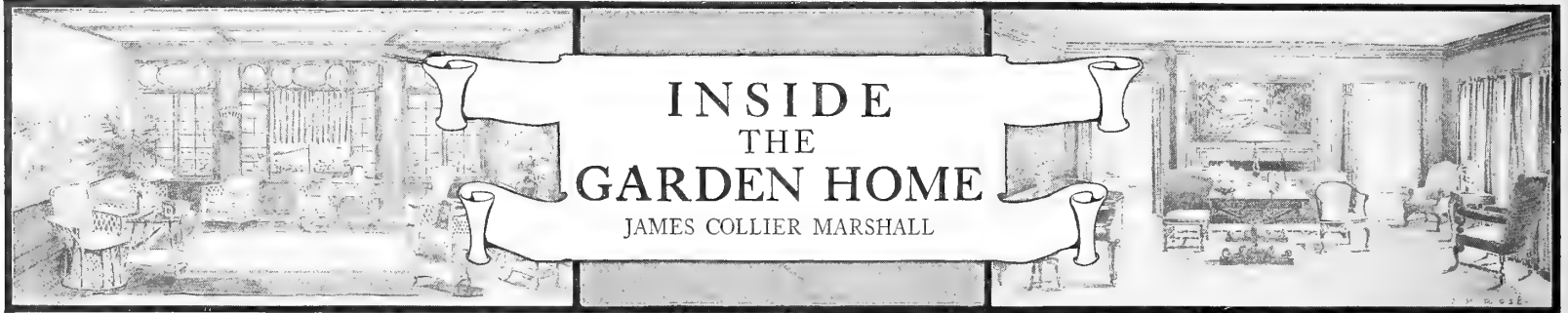
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IT IS easy enough to furnish a large house if the wherewithall to do it is available, but it is no mean task to outfit a cottage successfully when one must take into consideration limited space as well as cost of each piece.

This was borne in on me forcefully not long since when a reader asked me to tell where might be had a table with a lid-covered drawer for letter writing, such as are found in most hotel bedrooms. Wrote my inquirer: "I have a tiny house with only one guest room furnished I think satisfactorily, though I want to add a table of the sort that may be both centre table and writing desk, yet of the smallest size and simplest appearance. My guests shall be comfortably though simply served."

My search for this table led me through all the shops to the manufacturer's showrooms until I found what I wanted, and it occurred to me that we frequently overlook the comfort of our guests in outfitting our houses in simple ways that are easy to rectify. For instance, whether the house be large or small, rarely does one find a trunk or suitcase rack in his room. There is nothing that gives such satisfaction in either unpacking or packing one's belongings as to be able to get at the bag comfortably.

Every one knows the alternatives—using the bed and soiling the spread, a chair—and defacing it, the floor and ruining one's disposition! The worst of it all is when a rack is found it is invariably rickety. However,



Your guests will appreciate this mahogany trunk and suitcase stand. It costs only \$8.50

A good many wooden tables have been put on the market with flower boxes arranged in the ends but they have always seemed incongruous. The wicker one reproduced here, the first of its kind to be so built, gives no such unpleasant impression. Indeed, quite the opposite may be said of it, since its lines are not only not marred by the floral insets but improved thereby. Exceptionally well built, its proportions are correct—every inch being well accounted for. It is notable as being equally serviceable for use in the centre of the room or at its side, and while it was designed for a summer porch, it might in perfect taste be employed inside the house the whole year through.

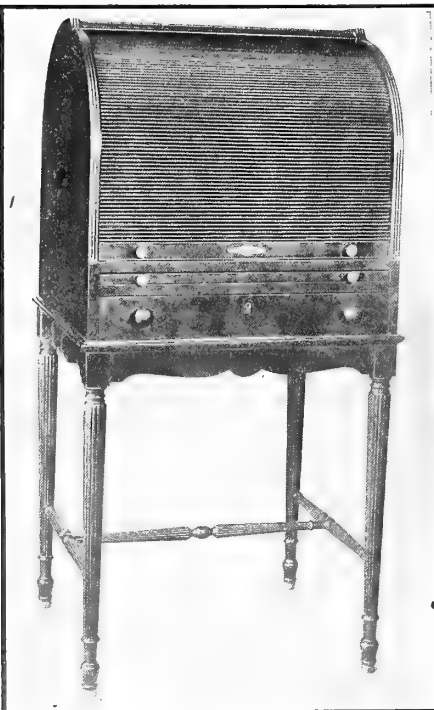
Apropos of tables and their dressings, I am reminded that the old time vogue, a custom that has never waned in England, of placing jars of fragrant salts on the tables in the living rooms of the house to freshen the air has come again into favor. These may be either of plain or cut glass or crystal filled with gaily tinted salts, or after the newer fashion, the jars and bottles may be decorated and the salts tinted to match the decorations. The idea is as gay as the salts are refreshing and the vogue promises to become a sensible custom. Anent fresh scents, let me tell also that a well known hostess has a maid carry through her drawing rooms just before the guests arrive a dish of burning lavender, which gives off a faint but delicious scent that lasts all evening. This custom of perfuming the house artificially is as old as history, and one that loses nothing through age.



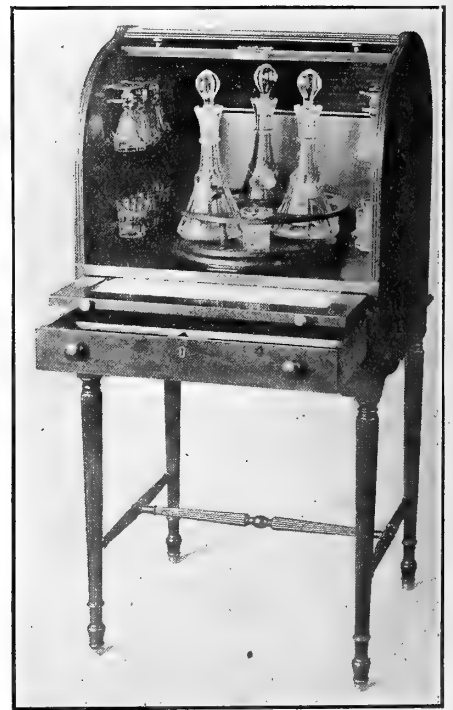
The fine proportions, simple lines and wisely conserved space recommend this table highly

the one pictured here is a fine exception, being excellently made and good looking enough to suit any setting, folding easily into a limited place in the closet when not in use.

Another interesting, if not altogether necessary, piece of furniture is the circumspect looking cellaret shown here whose nice proportions and dainty lines when closed in no manner prepare one for its very complete outfitting. As will be seen the roll top conceals three decanters on a revolving stand as well as six wine and six toddy glasses. There is room also for a cocktail shaker, the preparation of which appetizing drink is conducted on the porcelain topped slide seen below. The drawer is arranged with compartments for cards, score pads, poker chips and other first aids to these amusements. This is a most satisfactory article of furniture for the household that boasts no cellar, the summer cottage, or for a bachelor's rooms.



Note the dignity and dainty lines of this mahogany cellaret which adapt it to any setting



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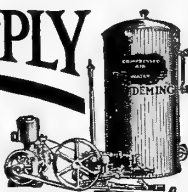


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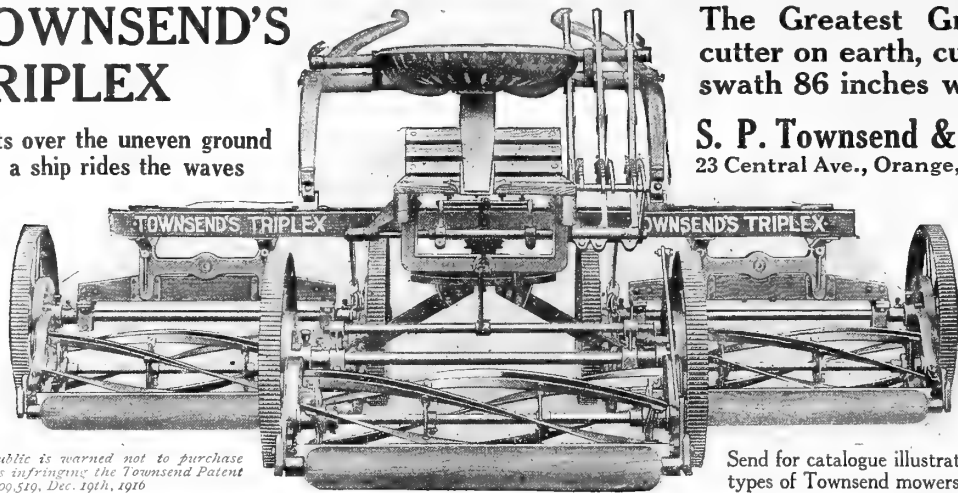
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How do You Kill Weeds?



THE old way has been by hand-weeding—paying excessive labor costs several times during the year.

But, to-day, owners of estates and homes, as well as leading railroads, municipalities, country clubs, parks and cemeteries maintain beautiful weed-free paths, gutters, drives, roads, tennis courts and rights of way by the use of **ATLAS WEED-KILLER**.

One gallon of Atlas clears 600 sq. ft. for the entire season. Apply in ordinary sprinkling can—diluted with 20 parts water. Weeds die a few days after first application—then, no more trouble for the entire year. Compare with costly hand-weeding which must be done over and over again.

(For killing weeds in lawns use **LAWN SILICATE**. Write for particulars.)

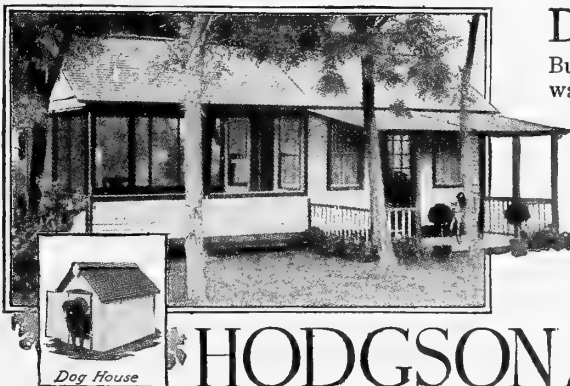
ATLAS WEED-KILLER

Grass and Weed-Killing Chemical

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We will furnish you a trial 2 qt. can of Atlas Weed-Killer on receipt of \$1.00 and this coupon, prepaid if you mention your dealer's name.

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CHRYSLER CHEM. ENG. CO., Inc.,
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Enclosed is \$1.00 for
a 2 qt. trial can of
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DO away with all the troubles, worries and expenses that go hand in hand with building. Buy a Hodgson Portable house. Whether you want to erect a cottage, garage, play house, poultry house or what-not, you'll find "just the thing" pictured in the Hodgson catalog. These houses are shipped to you in painted sections well finished and all ready to bolt together. You can put up any Hodgson house yourself—in a jiffy. Send for catalog.

E. F. HODGSON CO.
Room 228, 116 Washington Street, Boston, Mass.
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HODGSON Portable HOUSES



Mysterious as the opal, its structure more wonderful than the orchid, the beauty of the Iris is wholly ethereal. If you yield to its magic spell it will lead you across the border into a wonderland of delight.

FARR'S GOLD MEDAL IRISES

AWARDED not only the highest honors (the Gold Medal and Certificate of Merit) at the Panama-Pacific Exposition, but also awarded the highest praises by those who have seen Farr's Irises growing in many of the exclusive gardens of America.

These beautiful Irises were originated at Wyomissing, and are a selection from many thousands grown in my gardens. Some of the most distinct and beautiful varieties are included in this assortment of fourteen Irises which I call the

Panama-Pacific Collection

Chester Hunt. S. celestial-blue; F. dark marine-blue, bordered pale blue, shaded base. 27 in. 75 cts.

Hiawatha. S. pale lavender, flushed rose; F. royal purple, bordered lavender. 28 in. 75 cts.

James Boyd. Immense broad incurved standards forming a high dome-shaped centre; clear light-blue. F. dark violet, tipped and edged lighter. Named in honor of Mr. James Boyd, Haverford, Penna., winner of Silver Cup and a Gold Medal for a display of Irises made in Philadelphia in 1915 (all plants from Wyomissing Nurseries). 20 in. 75 cts.

Juniata. S. and F. clear blue; large, fragrant flowers. The tallest of all the Beardless Irises, with unusually long drooping foliage. 50 cts.

Mary Garden. S. pale yellow, flushed pale lavender; long drooping falls, creamy white, minutely dotted and veined maroon; stigmas clear yellow. 28 in. 75 cts.

Massasoit (New 1916). Standards and falls a very distinct shade of metallic Venetian blue—quite difficult to describe accurately. 75 cts.

Nokomis. S. pale lavender-white; F. velvety dark violet-blue, bordered white. Medium size flowers; tall-growing, free blooming. 50 cts.

Pauline. S. and F. rich pansy-violet; deep orange beard. Fragrant; large. 3 ft. 75 cts.

Powhattan. S. light bishop violet with deeper border; F. deep purple with crimson shade, large, horizontal spreading flower. 38 in. 75 cts.

Quaker Lady. S. smoky lavender with yellow shadings; F. aegeratum-blue and old-gold; stigmas yellow, yellow beard. 38 in. 75 cts.

Red Cloud. S. rosy lavender-bronze; F. velvety maroon-crimson, reticulated yellow, stigmas old-gold. 2 ft. 75 cts.

Rose Unique. S. and F. bright violet-rose, the nearest approach to a pink Iris. 75 cts.

Shrewsbury. S. rosy bronze; F. violet purple, with lighter shading; heavy orange beard. 75 cts.

Wyomissing. S. creamy-white, suffused delicate soft rose; F. deep rose at the base shading to a flesh-colored border. 75 cts.

The Entire Collection of 14 Varieties For \$10

SPECIAL OFFER OF TWO 1918 NOVELTIES. In the 1918-19 edition of Farr's Hardy Plant Specialties I shall introduce two new Irises of remarkable beauty.

Paxatawney. S. pale parma-violet, with sulphur yellow suffusions deepening at base. F. darker, with brown and yellow reticulations. 36 in. \$1.

Swatara. S. lobelia-blue, suffused bronzy yellow at base. F. bright violet, with conspicuous orange beard. Large flower. 36 in. \$1.

With an order for the complete Panama-Pacific Collection I will include **one plant of each** of these new Irises, provided you indicate your desire to add them to your garden.

Two Unusually Fine Irises

White Knight. The whitest of all Irises; sweetly scented. \$1.

Iris King. S. clear lemon-yellow; F. rich maroon, bordered yellow. 50 cts.

Farr's Hardy Plant Specialties (Edition 1917-18) describes all of my seedling Irises, and upward of 500 other varieties, many of which are illustrated in color. Peonies, Oriental Poppies, Aquilegias, and other hardy plants for fall planting are described and illustrated. Most garden-lovers have this book, but if you do not have a copy, write me to-day.

BERTRAND H. FARR—Wyomissing Nurseries Co., 104 Garfield Ave., Wyomissing, Penna.

In the September issue of Garden I will tell you all about the wonderful collection of Peonies that my painstaking care has made the largest assortment in America. So many have asked me to help them plan their garden that I have found it necessary to form a special department in charge of a skillful landscape designer and plantsman. I shall be glad to assist you in any way desired, whether by off-hand suggestions or by advice, which will be cheerfully given without charge. For the preparation of detailed plans a charge will be made.

FALL PLANTING for the SPRING DRIVE

The GARDEN MAGAZINE

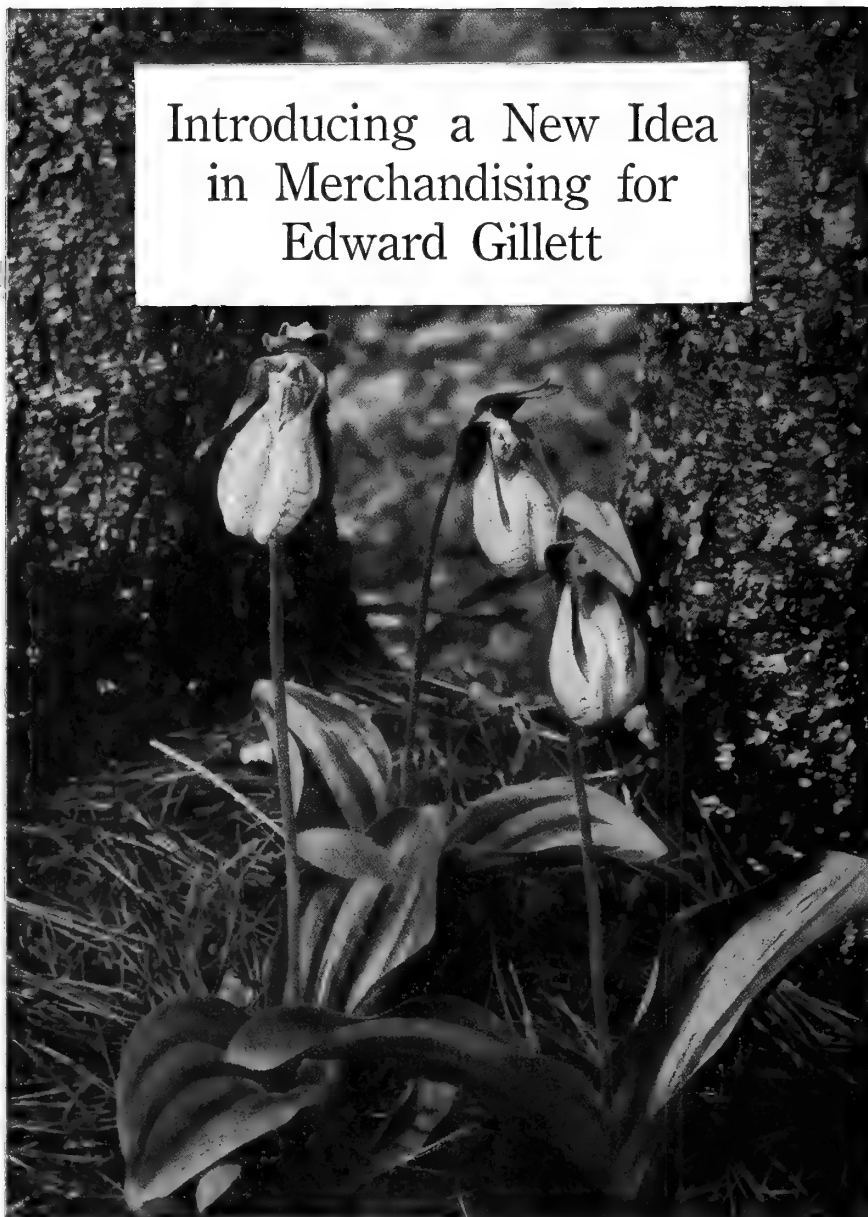
September
1917

Price
25c



"Training the Recruit"

Introducing a New Idea in Merchandising for Edward Gillett



Ferns for Ground Covers

One customer of ours recently used 40,000 of our hardy ferns to create a perfect ground cover and give a proper finish to a massive planting. I can fill orders of that size, beginning with the middle of September.

About Rock Gardens

The Rockery idea in gardening is rising rapidly in popular favor. Those who love the dainty fern and many other attractive forms of plant life found in the rock garden, will find me well stocked with plants for rockeries of all descriptions.

The Lure of New England's Hardy Orchids

To many readers of The Garden Magazine Hardy Orchids will sound like a paradox. Orchids generally awaken thoughts of greenhouses and conservatories, of prices for the flowers that are beyond the reach of the average. And yet, there *are* Orchids that are so hardy that they live outdoors through the most severe New England winters. Year after year they delight us with their quaint and curious flowers. The lovely Lady's Slippers or Moccasin Flowers, the Orchis, Ladies' Tresses and Rattlesnake Plantain, how they please us by their faithful coming again and blooming.

For years *hardy* orchids have been my hobby. First I collected them because I loved them. Later I grew them to sell again, to get others to understand them as I do. After all these years, my favorites are still

The Lady's Slippers

Their botanical name—*Cypripedium*—is their worst handicap. *Cypripedium acaule* is often called the Red Lady's Slipper, but the flowers are really rose-purple, as shown above. It thrives in any well-drained, light weight soil. I grow it in a mixture composed of three parts sand and two parts leafmold. See prices alongside.

C. parviflorum or Small Yellow Lady's Slipper is particularly charming growing in masses, in shady positions, left undisturbed for years. 20c. each; \$2.00 per dozen; \$10.00 per hundred.

C. pubescens or Large Yellow Lady's Slipper needs ample moisture, a shady spot, but it prefers well-drained soil composed largely of humus and leaf-mold. 20c. each; \$2.00 per dozen; \$10.00 per hundred.

C. spectabile, the Showy Lady's Slipper is the finest and most showy of all. I grow it to perfection in pure spagnum moss, spread 4 to 5 inches deep on top of ground where there is constantly much moisture. 25c each; \$2.50 per dozen; \$15.00 per hundred.

The Picture Above

shows *Cypripedium acaule* thriving to perfection in its native haunts. Well-mulched with a thick layer of pine needles, it is a subject of unlimited beauty and wide usefulness. One-crown plants 20c. each, \$2.00 per dozen; \$10.00 per hundred. Two-crown plants 30c. each; \$3.00 per dozen; \$15.00 per hundred. Single and dozen lots postpaid. In 100 lots by express only. Plant this fall.

Wildflowers, the Woodland's Charm

Do you recall the "posies" of childhood days when, as a youngster, you used to ramble through the woods in search of things that appealed to the childish imagination? Do you remember the Bloodroot and Dogtooth violets, the Snakeroots, Trilliums and Hepaticas? In common with many, I, too, fell in love with these fascinating children of the wild flora. Now, as a full-grown man, I grow them *by the thousands* so that their charms may be enjoyed by others sharing my sentiments. I have kinds for all soils, for sunny or shady places, for wet or dry situations. Write for my catalogue or tell me which most appeal to you among wild flowers. I shall gladly help you in working out any planting ideas you may have.

Fall Planting Insures an Extra Year of Flowers

Nearly all the plants growing in my nursery can be transplanted in the fall with full assurance that they will grow. Plant Trilliums, Lilies, *Cypripediums*, etc., now, so they can start blooming early next spring. Write for my free catalogue describing all and illustrating many of the unusual plants I grow. If you have in mind the planting of a wild or woodland garden, a rockery or any other garden scheme of unusual character, let me send a competent man to confer with you. A post card brings the Catalogue.

EDWARD GILLETT, *Hardy Fern and Wild Flower Specialist*

3 Main Street, Southwick, Mass.

Farr's Peonies

THE ARISTOCRATS OF

THE HARDY GARDEN



PEOONIES, the glory of June, are the aristocrats of the hardy garden. They surpass the rhododendron when planted in masses, and rival the rose in delicacy of color and fragrance. Peonies never can become common; those who become the possessors of these rare sorts will have an asset of distinct worth, which will increase in value from year to year. The collection of Peonies at Wyomissing contains the new and rare introductions—many of them at present found only in the gardens of Peony connoisseurs. For those who desire to possess some of these distinct varieties I have made a personal selection of sorts showing a wide range of colors and type, and here offer them in collections for fall planting:

ROYAL COLLECTION

Twelve of the grandest Peonies in existence, regardless of price.

- Albatre.** White and lilac. \$1.50
- Baroness Schroeder.** Flesh-white. \$1.50.
- Germaine Bigot.** Lilac Rose. \$2.50.
- George Washington.** Dark-crimson. \$1.50.
- James Kelway.** Rose-white \$2.00.
- Karl Rosenfield.** Dark-crimson. \$4.50.
- Milton Hill.** Lilac-rose. \$3.00.
- Marguerite Gerard.** Hydrangea pink. \$1.50.
- Mme. Auguste Dessert.** Violet-rose. \$2.50.
- Rosa Bonheur.** Violet-rose. \$5.00.
- Sara Bernhardt.** Mauve-rose. \$4.00.
- Simmons Chevalier.** Lilac-rose. \$2.00.

COLLECTION B

Twelve of the best standard Peonies at a moderate price.

- Alexander Dumas.** Violet-rose. 50 cts.
- La Coquette.** Light pink. 50 cts.
- Duchesse de Nemours.** Pure white. 50 cts.
- Comte de Paris.** Violet-rose. 50 cts.
- Dr. Bretonneau.** Pale lilac. 35 cts.
- Edulis superba.** Mauve-pink 50 cts.
- Festiva maxima.** White. 50 cts.
- M. Hyppolite Dellille.** Lilac-rose. 50 cts.
- Princess Beatrice.** Violet-rose. 50 cts.
- Triomphe du Nord.** Solferino-red. 50 cts.
- Delachei.** Violet-crimson. 50 cts.
- Rubens.** Dark-crimson. 50 cts.

"ARISTOCRAT" COLLECTION

Twelve beautiful varieties, each an aristocrat among peonies.

- Adolphe Rosseau.** Purple-garnet. \$2.00.
- Albatre.** White; centre lilac rose. \$1.50.
- Albert Crousse.** White, flecked crimson. \$1.50.
- Armandine Mechin.** Bright crimson. \$1.50.
- George Washington.** Fiery crimson. \$1.50.
- Grandiflora.** Delicate shell pink; late. \$1.50.
- La Tendresse.** Milk white. \$1.50.
- L'Indispensable.** Lilac white, pale violet rose centre. 75 cts.
- Mlle. Rosseau.** White; lilac centre. \$1.50.
- Mme. Forel.** Violet rose. \$2.00.
- Simmons Chevalier.** Lilac-rose. \$2.00.
- Venus.** Hydrangea pink. \$2.00.

"PREMIER" COLLECTION

Twelve peonies of the highest order of merit at moderate prices.

- Boule De Niede.** White, flecked crimson. 75 cts.
- Duc de Wellington.** White, sulphur centre. 50 cts.
- Don Juan.** Crimson amaranth. \$1.00.
- Felix Crousse.** Bright red. 75 cts.
- La Tulipe.** Lilac white, striped crimson. 75 cts.
- Mme. Muysart.** Silver tipped. 75 cts.
- Mme. Moutot.** Tyrian rose. 75 cts.
- Mme. Thouvenin.** Pure mauve. \$1.00.
- Mlle. Leonie Calot.** Rose-white. 75 cts.
- Marechal Vaillant.** Mauve pink. 50 cts.
- Marie Lemoine.** Pure white. 75 cts.
- Mons. Jules Elie.** Soft lilac rose. \$1.00.

Royal Collection, complete, \$27

Collection B, complete, \$5

Aristocrat Collection, complete, \$16

Premier Collection, complete, \$7.50

Royal Collection and Collection B for \$30. Aristocrat Collection and Premier Collection, \$20. The Four Collections, Royal, B, Aristocrat and Premier for \$48

All the above varieties and hundreds of others in my complete collection at Wyomissing, are fully described in the 1917-1918 Edition of my book

FARR'S HARDY PLANT SPECIALTIES

Money cannot buy a treatise on Peonies and Iris so complete and authoritative, because no other book of this character is in existence—yet I will mail you a copy free if you will send me your name and address, and mention the Garden Magazine, for I want you to know Peonies as I know them. September and October is the best time to plant Peonies, for then with the strong roots I send, you will obtain a large percentage of bloom the first season.

BERTRAND H. FARR, Wyomissing Nurseries Co., 104 Garfield Avenue, Wyomissing, Penna.

A Peony Treat of Exceptional Character

To introduce the "elite" of my peony field into your garden, I will send the following peerless six at a substantial saving, in roots of a quality that will make you order more—Felix Crousee, deep crimson; Mad. de Verneville, dainty blush; Mlie. Leonie Calot, soft flesh; Festiva Maxima, grandest white; Mons. Jules Elie, pink; Eugene Verdier, pink with crimson centre. All of these are the unquestioned leaders of their type and class.

Six Premier Kinds Strong 3 to 5 Eye Roots \$3

Because of size of roots, this collection can be shipped only by express.

If You Like Phloxes

here is a selection of great merit—Athis, Elizabeth Campbell, Jules Cambon, Sieboldii, Pantheon, and Eiffel Tower, a retail value of \$1.25.

Eight Splendid Sorts, one Strong \$1 Plant each, postpaid

Our stock of Hardy Phloxes is unrivalled in both quality of kinds and quantities on hand.

A Large Stock of Hardy Plants

suitable for present planting is described in my catalogue—gladly mailed free. It lists only such plants as I can guarantee to be true-to-name and offers them at unusually attractive prices for quality stock. Write me or order above—satisfaction guaranteed.

RALPH E. HUNTINGTON

Painesville Ohio

California Bulbs and Plants

Many of California's beautiful native plants do well in eastern gardens and their charm and novelty justify extra care. My *Catalogue A* lists them, and gives fullest cultural directions.

Hardy Perennial Plants

The great charm of English gardens is in these, and my gardens at The Terraces contain the finest collection west of the Alleghenians.

My *New Catalogue E* brings to the door of the flower-lover of the Pacific slope a wonderful collection of fully 200 Irises, superb Phlox, perennial Larkspurs, Hollyhocks, Poppies, Michaelmas Daisies in fine varieties, and a host of other rare and beautiful flowers. It tells him how and where to grow each. I can ship in his best planting season, and I pay express charges or postage to his door. For the Eastern grower I have all of this list and many novelties. Catalogue E on application.

Any of my catalogues will be forwarded to readers of the Garden Magazine who send me their name and address.

CARL PURDY

The Terraces

Box A Ukiah, California

SAVE THE TREES.—Kill San Jose Scale, Aphid, White Fly, etc., by spraying your trees with

GOOD'S CAUSTIC FISH OIL SOAP No. 3

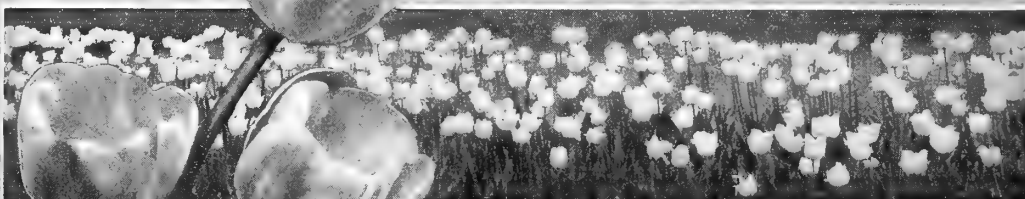
Sure death to tree pests. Contains nothing injurious to trees—fertilizes the soil. Used and endorsed by U. S. Dept. of Agriculture.

FREE—Our valuable book on Tree and Plant Diseases. Write for it to-day.

JAMES GOOD, Original Maker, 2111-15 E. Susquehanna Ave., Phila.

Vaughan's Darwin and Cottage Tulips

PLANT THE BULBS THIS FALL



THESE majestic tulips are without a rival in Spring flowers. Their adaptability to our American climate due to their hardiness and vigor, their stately bearing and exquisite shades make them now the most extensively planted of all spring-flowering bulbs. Planted in beds, in clumps among perennials, or bordering shrubs, their effect in May is beautiful beyond belief.

Reasons

for planting

Vaughan's

During our forty years of dealings in every bulb growing district of the universe we have worked up a successful and reliable business connection, strengthened by periodical visits of a representative, and latterly a yearly visit to the war-burdened bulb districts of Europe. This should satisfy our readers that our efforts to please have been worked to the limit, and proven by our thousands of constant customers. Last year when many firms disappointed on deliveries, Vaughan's Seed Store were there on time, and with full quantities. These are big reasons for placing your order here.

Twelve Splendid Late Tulips

DARWIN VARIETIES

BARTIGON. (24 ins.) Glowing crimson scarlet, vigorous, lasts well in sun, very highly recommended. Doz., 50c; per 100, \$3.50; per 1000, \$30.00.

MASSACHUSETTS. (25 ins.) Deep rosy pink petals, with lighter edge. Long cup-shaped blooms on stout stems. A splendid pink, recommended. Doz., 50c; per 100, \$3.00; per 1000, \$25.00.

CLARA BUTT. (20 ins.) Clear salmon pink, with lighter edges. We know no better tulip of its color. Doz., 30c; per 100, \$2.00; per 1000, \$17.00.

WHITE QUEEN. (22 ins.) Pale blush, changing with age to almost pure white. An exquisite and indispensable flower. Doz., 45c; per 100, \$2.60; per 1000, \$23.00.

REV. H. EWBANK. (20 ins.) Deep lilac, toning to pale lavender. Lasts splendidly; a collection is incomplete without it. Doz., 50c; per 100, \$3.00; per 1000, \$27.00.

ZULU. (23 ins.) Violet black, reflecting a glistening violet sheen. Effective when contrasted with lighter shades. Doz., 90c; per 100, \$6.00; per 1000, \$55.00.

(Above prices do not include pre-payment)

No. 1.—Special Prepaid Offer for the above Six 12 of each (72 bulbs) all named for \$3.25.

No. 3.—The Two Collections Prepaid for \$7.50 Free Catalogue with each order.

COTTAGE VARIETIES

MRS. MOON. (30 ins.) Golden yellow pitcher-shaped bloom; tall, upright, sweetly perfumed. Doz., 65c; per 100, \$4.50; per 1000, \$40.00.

THE FAWN. (20 ins.) Pale yellowish fawn color, combined with rosy lavender and pale blush margin. Doz., 50c; per 100, \$3.25; per 1000, \$28.00.

EMERALD GEM. (18 ins.) Bright orange-scarlet, with sea-green base, margined yellow. Sweet scented and very late. Doz., 50c; per 100, \$3.50; per 1000, \$30.00.

FAIRY QUEEN. (22 ins.) Rosy-heliotrope, blending to rosy-lavender, with yellow margin. Inside purplish mauve and yellow. Doz., 50c; per 100, \$3.25; per 1000, \$27.00.

GLARE OF THE GARDEN. (18 ins.) Glowing crimson scarlet, dazzling in sunlight; best late tulip of its color. Doz., 65c; per 100, \$4.50; per 1000, \$40.00.

COLUMBUS (Gala Beauty). (18 ins.) Golden yellow, feathered and splashed with crimson stripes. A striking combination of colors. Sweet scented. Doz., \$1.70; per 100, \$13.00; per 1000, \$110.00.

(Above prices do not include pre-payment)

No. 2.—Prepaid Offer for the above Six 12 of each (72 bulbs) all named for \$4.75.

Write for Complete Autumn Catalog, (56 pages); mailed free everywhere.

There are many beautiful bulbs and plants, which can only be planted successfully in the fall, that are often overlooked by those who do not realize the importance of Autumn-planting. Our Catalog is a complete and helpful guide for this important season. Write today. (Mention Garden Magazine.)

43 Barclay Street NEW YORK VAUGHAN'S SEED STORE 31-33 W. Randolph St. CHICAGO

PEONIES

ONE of the largest, showiest, richly colored and spicily fragrant of all garden flowers.

My American grown roots are all clean, hardy and guaranteed true to name. Over one hundred of the best varieties.

For most satisfactory results they should be planted in September or October. Send to-day for my booklet "Your Spring Garden." It also tells about Tulips, Narcissi, etc.

A.B. Vanderbeek's
Bulbs

172 Broadway

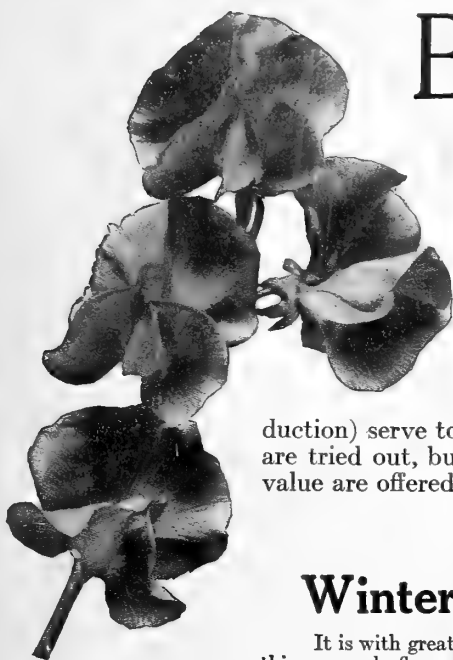
Paterson, N. J.



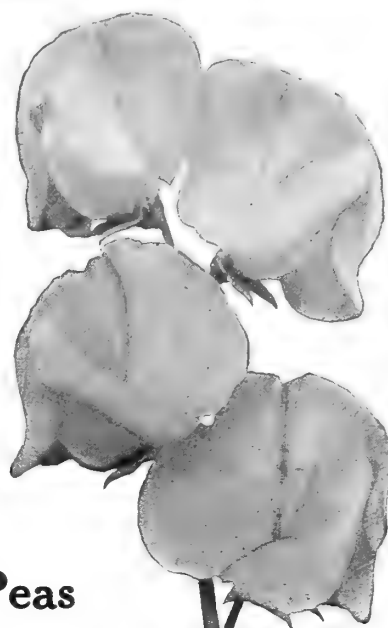
Burpee's Sweet Peas

W. Atlee Burpee & Company have long been famous as American headquarters for Sweet Peas.

We were the first to introduce the Spencer type into America. Such famous varieties as King White, Fiery Cross, Primrose Spencer, Apple Blossom, King Edward Spencer and many others (all our introduction) serve to justify our claims. Each year many new varieties are tried out, but only those which prove themselves of exceptional value are offered to our customers.



Early King
Reduced one-half



Early Enchantress
Just half size

Burpee's New Early- or Winter-Flowering Spencer Sweet Peas

It is with great pleasure that we offer the following Novelties in Sweet Peas, as we are confident this new early-flowering race of Spencers will greatly increase the value of the Sweet Pea.

Burpee's Early-Flowering Spencer Sweet Peas are particularly adapted to sections where the ordinary summer-flowering varieties have not proved satisfactory. In our Southern States, Japan, Australia, New Zealand, and in all the tropical and sub-tropical countries, the new Early-Flowering Spencers, if sown during the early fall months, will produce flowers in abundance throughout the early spring and will continue blooming freely until killed by extreme heat.

Nine of these varieties were awarded nineteen Certificates of Merit by the following:
Pennsylvania Horticultural Society, Philadelphia **American Sweet Pea Society, San Francisco**
The International Show, New York

With a keen appreciation of the splendid future of the Sweet Pea, and particularly of New Early Flowering or Long Season Spencers, we began crossing the Spencer Flowering Sweet Peas with the Early Flowering Grandiflora as far back as the Summer of 1909.

We now offer with the greatest confidence the splendid Novelties listed below. These are all true, thoroughly fixed in type, and are a great improvement on the various colors.

If grown in the open they flower several weeks ahead of the Standard or Summer Flowering Spencers, and with proper treatment continue to bloom quite as long as that type.

Burpee's Early Enchantress—Flowers immense, measuring 2½ inches in diameter; exquisitely waved or frilled, stiff stems. A bright rose pink, deeper toward the edges of standard and wings, softening in tone toward the centre of the flower. **Pkt.** (20 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Burpee's Early Loveliness—The color is white, the entire flower being suffused soft pink until it reaches the edges, which are distinctly picoteed with rose-pink. A flower of immense size and great substance. Beautifully waved. **Pkt.** (20 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Burpee's Early King—A glowing, rich bright crimson, of great size and perfect form, averaging fully two inches in diameter, produced freely in threes and fours on strong stems of great length. **Pkt.** (12 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Fordhook Pink and White—Similar to the old Blanche Ferry, having a bright rose pink standard with creamy white wings lightly suffused rose. Flowers often measure fully 2½ inches in diameter, while the form is perfect. The beautifully waved blooms are carried on stiff stems of great length, usually in threes and often in fours. **Pkt.** (20 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Fordhook Pink—A distinct shade of pink suffused with lavender throughout. Flowers of large size, exquisitely waved, and usually produced in threes and fours on long stems. Under artificial light it is particularly pleasing. **Pkt.** (20 seeds) **10 cts.**; ½ oz. **\$1.00**; oz. **\$1.75**, postpaid.

Burpee's Early Pink Beauty—The color is soft rose-pink on white ground, richer toward the edges, gradually softening in color as it reaches the centre of standard and wings. The flowers are of great size, beautifully waved and finely placed on the immense stems, which usually carry three or four of the magnificent blooms. **Pkt.** (20 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Burpee's Primrose Beauty—An attractive and pleasing shade of deep primrose, flushed with rose. Flowers of great size and beautifully waved in true Spencer form. **Pkt.** (12 seeds) **25 cts.**; **5 pkts. \$1.00**, postpaid.

Fordhook Rose—A charming shade of rosy carmine. The flowers are of largest size and usually borne in threes and fours on long stiff stems. **Pkt.** (20 seeds) **10 cts.**; ½ oz. **\$1.10**; oz. **\$2.00**, postpaid.

Burpee's Rosy Morn—A magnificent flower of great size and substance. Flowers grown under ordinary field culture have measured fully two inches in diameter. The color is a pleasing shade of rose with crimson-scarlet standard, while the immense flowers are usually borne in threes or fours on stiff, long stems. **Pkt.** (20 seeds) **15 cts.**; ½ oz. **\$1.25**; oz. **\$2.25**, postpaid.

Burpee's Early Sankey—This truly magnificent white was awarded a Special Silver Medal when exhibited at the great International Show in New York, March 20, 1915, also Certificate of Merit at the Spring Show of the Pennsylvania Horticultural Society, Philadelphia, March 23, 1915. **Pkt.** (12 seeds) **25 cts.**; **5 pkts. \$1.00** postpaid.

Yarrowa—First exhibited at the great International Flower Show, New York, March, 1914, where we were awarded a Certificate of Merit by the American Sweet Pea Society. Bright rose-pink with a clear, creamy base. Floradale Crown Seed exclusively. **Pkt.** (30 to 40 seeds) **15 cts.**; **2 pkts. for 25 cts.**; ¼ oz. **60 cts.**; oz. **\$2.00**; ¼ lb. **\$6.00**; lb. **\$20.00**, postpaid.

Write for "Burpee's Offering"
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THE GARDEN MAGAZINE

SEPTEMBER 1917

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LEONARD BARRON, Editor



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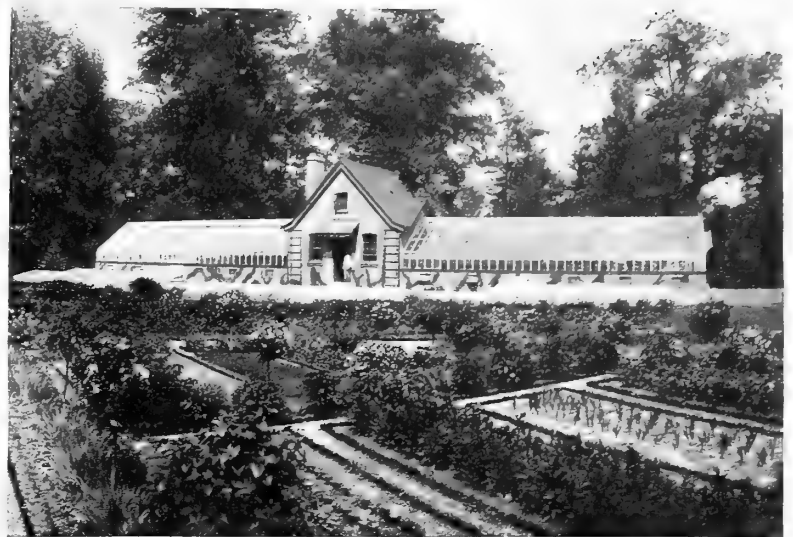
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THERE are two compartments or garden plots on either side of the workroom.

Those four plots, each 18 feet wide by about 33 long give a wide range of temperature controls.

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It is correspondingly easy to heat, as the distribution of pipes is equal on both sides of the boiler.

Should you not care just now to build all four compartments—then have the two on one side of the workroom erected; and then add the other two later.

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New Lilacs on Their Own Roots

Of late years there has been a multitude of new varieties of Lilacs grown, and some of them have very great beauty; but, unfortunately, almost all the stock offered, both in this country and Europe, has been budded on privet and is practically worthless, for Lilacs grown on this are certain to die in a few years. Nurserymen bud Lilacs on privet because they can produce a large stock quickly and inexpensively; but one Lilac on its own roots is worth a score of budded plants.

Fifteen years ago we bought all the available stock of choice named Lilacs on their own roots in Europe, and since then we have been both growing and buying until we have a very large and fine stock. On account of their starting into growth so early in spring, Lilacs do best when planted in the fall.



The present day perfection of development in the Lilac is fairly represented by Dame Blanche which has large branched thyrses of large double white flowers

Prices, except where noted \$1.25 each, \$12 per doz.

- Alba Grandiflora.** Large spikes of pure white flowers. 75 cents.
- Charles X.** Large, shining leaves and great trusses of reddish purple flowers.
- Congo.** Bright wallflower-red.
- Dame Blanche.** Double; white.
- Dr. Lindley.** Large compact panicles of purplish-lilac flowers, dark red in bud.
- Emily Lemoine.** Double; very large flowers of fine globular form. Rosy lilac; beautiful.
- Geant des Batailles.** Bright reddish lilac, in large trusses. Very brilliant and effective. \$1.
- Japonica.** We have some extra-large specimen plants of this July-flowering Lilac. Immense spikes of pure white flowers. \$1.
- Jean d'Arc.** Double, enormous panicles of very large flowers; pure white.
- Frau Bertha Damman.** One of the very best whites, immense panicles.
- Lamartine.** Large panicles of mauve-rose flowers; very early. 75 cents.
- La Ville de Trays.** Large purplish-red flowers. Extra large six part plants. \$2 each.
- Leon Simon.** Double compact panicles; bluish-crimson.
- Lemoinei flore pleno.** Double; carmine-violet. \$1.
- Le Gaulois.** Double; dark red. Extra-large plants, \$1.50
- Madame Lemoine.** Superb; double; white.
- Marie Legraye.** Large panicles of white flowers. The best white Lilac. \$1.
- Michael Buchner.** Dwarf plant; very double; pale lilac.
- Mathieu de Dambasle.** Double, carmine violet. Extra large; heavy plants. \$1.50.
- Negro.** Dark violaceous purple.
- President Carnot.** Double; lilac tint, marked in centre with white; extra-large, fine truss. \$1; extra heavy, \$2.
- President Grevy.** Double; vinous violet.
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- Virginite.** Pure white.
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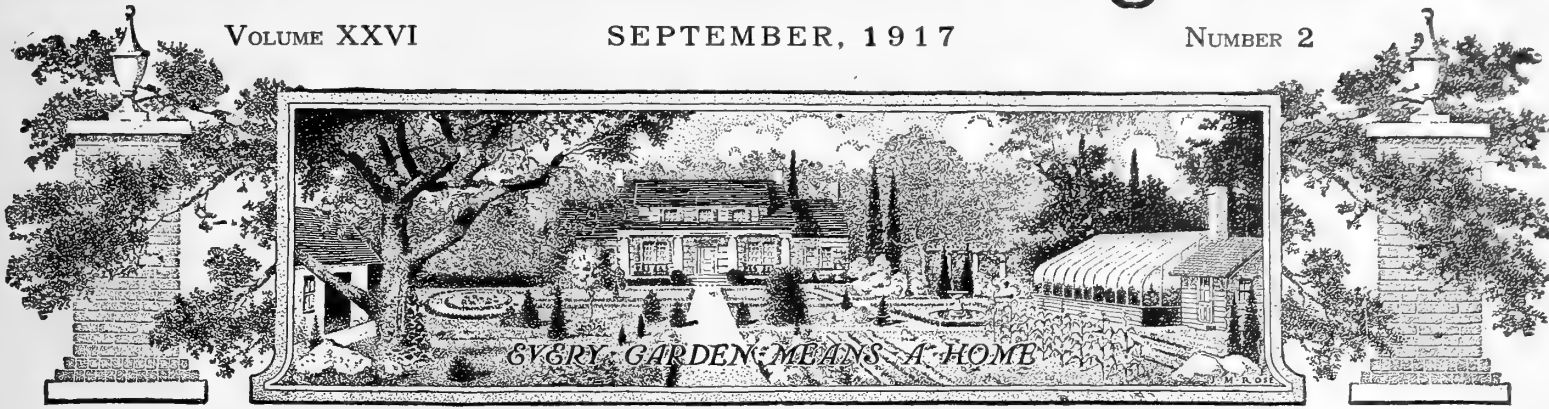
Elliott Nursery Company, 307 Magee Bldg., Pittsburgh, Pa.

The Garden Magazine

VOLUME XXVI

SEPTEMBER, 1917

NUMBER 2



AMONG OUR GARDEN NEIGHBORS

Wintering Herbaceous Plants.—Since writing the notes about the newer perennials (published in last month's GARDEN MAGAZINE) my experience with *Thalictrum dipterocarpum* leads me to believe that to insure its wintering over safely (in this section, at all events) it is necessary to select for it a particularly well drained spot in the border and give it some protection. I think, however, that it is mainly the damp and not the cold that proves fatal to it; plants under sashes have always wintered over perfectly for me, without mats or any other covering, beyond the single thickness of glass.—*Frank M. Thomas, Pennsylvania.*

Peonies that Fit.—I want help! All the Peonies in the lists of the dealers are alike in merit, but I want relative facts about some good varieties to buy at a moderate price, say about \$2 for two-year roots. Please suggest these varieties: (1) a white with as much yellow as possible, (2) a different shade of red than Felix Crousse, and (3), a different pink from M. Jules Elie.—*E. A. W., Pa.*

—I suggest, for the first, Solfatare, or Duc de Wellington; for the second, Adolphe Rousseau, Raphael, Volcan, Mme. Bucquet, or Edouard André; for the third, Livingstone, Albert Crousse, Eugénie Verdier, Delicatissima, or Triomphe de l'Exposition de Lille.—*A. P. S.*

A Hedge of Lupins.—We have invariably found that the most pleasing effects in and about the garden are the outcome of natural grouping and not the result of studied arrangement. Few spots on our "domain" can rival in attractiveness the one glorified by a big clump of golden Day Lilies veiled in a mist of wind-sown white Columbine, beneath the drooping branches of an old apple tree; or the tall, glowing "lamps" of Phlox against a curtain of wild Clematis that sways down from the trees. And so, too, it was almost by chance that our Lupin hedge came about.

One spring we had sown a row of them, and when they came up very thickly they were neglected. The following year, they were a mass of enormous clumps far overcrowding the allotted space. A curving piece of turf surrounding a well is separated from the vegetable garden by a row of big red-currant bushes, and the cultivated space intervening between them and the grass plot suggested a border. So one rainy afternoon the Lupins

were laboriously dug up, separated into smaller clumps by a process of "short division" and hastily set close together in a line following the curve of the turf. The rain continued to water them, and we gave them no care, or scarcely a thought till they began to bloom. How they flourished! Our hedge was the admiration of all the passers-by, and the spikes

imitation of the other natural one, by starting another hedge of various pink varieties, shading down to a group of white ones.

If some of you find yourselves overburdened with Lupins, perhaps you may like to "go and do likewise."—*Charlotte Brassey-Brierley, Maine.*

A Rare Poppywort.—It is customary to dismiss *Meconopsis* from further attention, remarking that our atmosphere is too dry for their family. But under date of August 11, Mr. A. E. Thatcher of Bar Harbor, Me., telegraphed that "*M. integrifolia* opened perfect flowers." This is one of Mr. E. H. Wilson's notable discoveries in herbaceous plants and Mr. Thatcher flowers it for the first time in America. We shall refer to the subject again next month.—*L. B.*

Pansies all the Year in Tennessee.—For three years I have not planted a seed and have Pansies every month in the year. About July or August, I allow the seed pods to ripen and sometimes even before, for it seems impossible to keep all the blooms picked. I leave the old plants until they become exhausted. By the time I pull them up, I find under the old plants many young seedlings. If too thick, I transplant. In April, May, and June they are at their height. The bed is a solid mass of blooms. About once a month they are given liquid fertilizer (rather weak) by lifting the stems and pouring on the roots. In that way, the foliage and blooms are not injured. Sometimes in early spring, they are given a little pulverized sheep manure, but use it with care, for it is very strong. In the fall, I mulch with small leaves, such as Elm or Persimmon, leaving it on in the spring, so the bed is really covered with leaf mould most of the time, which keeps their roots cool and moist. In December, ten days after zero weather, I gathered a dozen blooms (big heads but short stems), I must add they were under six inches of snow when the zero weather came, so of course were protected. I give water liberally in dry seasons, but they are usually able to stand weather conditions, as well as other flowers. They have only one enemy that I know of and that is the cutworm, but by being an "early bird," I usually catch the worm, for he is not far away and always leaves signs of his work.—*B. N. Tomlinson, Tenn.*

The Neighbors' Present Duty

¶ In reviewing the present situation, so far as it concerns those who have had the privilege of "doing their bit" in increased food crop production, Secretary of Agriculture D. F. Houston says:

¶ "The producers have responded promptly to the appeal issued by the President at the beginning of the war, and Nature has been bountiful. The time has come for us, as consumers and conservers, to do our share.

¶ "Any housewife who desires additional information is urged to get in touch with local organizations or with the local representatives of the Department of Agriculture, the State Agricultural Colleges, or directly with the Department of Agriculture in Washington, which will mail free of charge, on receipt of a post card request, literature covering all phases of canning, drying, preserving, pickling and the home storing of perishable fruits and vegetables.

¶ "By cooperating with the Department at this time, the women of the country can render a definite national service."

of bloom we cut from it were legion—thus increasing the abundance of flowers. They were, for the most part, the shades of blue, with a chance grouping of white at one end which straggled off artistically down the line and was lost among the blue ones. Seen from the street, beyond the fruit-hung currant bushes, with the vivid green of lettuce beneath them, they were most effective. This year we have tried to create as good an effect, in

Chinese Cabbage.—The one difficulty in the growing of pe-tsai or Chinese cabbage is found in its exasperating tendency to go to seed before making heads of edible size. Oftentimes the only way to obtain a good crop is to



Chinese cabbage, pe-tsai, is a useful summer salad

sow the seed as late as early July. Fortunately this vegetable makes rapid growth, but it is desirable for the table in midsummer, when lettuce is not at its best. It has been my experience that there is wide variation in the different strains of Chinese cabbage. That which I planted last year early in the spring gave a summer crop that bothered me but little by seeding. This year's seed from another source was very much less satisfactory. I believe that the way to have pe-tsai when we want it is to save seed from chosen plants which head up well and early and to continue the process of selection until a good strain is obtained. This is an excellent vegetable and rapidly growing in popularity among people who are fond of salad plants. Eaten with sugar like lettuce it is delicious. Some



New hybrid Tree Peony, La Lorraine, which has flowers of rich yellow, maroon red at centre

of the greenhouse men are considering the commercial growing of Chinese cabbage under glass in winter, and last season one of the fancy grocery stores in Boston was selling it until well into the winter.—*E. I. Farrington, Mass.*

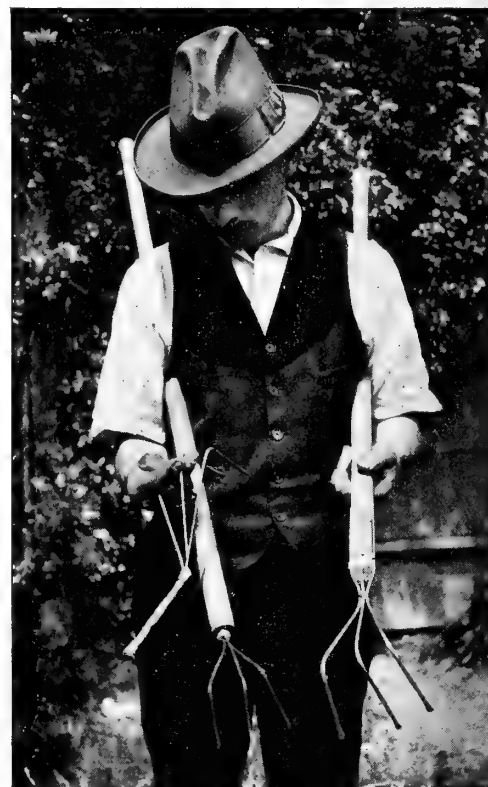
Canning Kohl-Rabi.—My experiences in canning kohl-rabi may be of some value now that the cry is "can all you can." I found kohl-rabi a very welcome change from the commoner vegetables during the winter. As an experiment I tried a few cans, using only small "roots," about two and one half inches in diameter. They matured to this size in about eight weeks. If left too long they become hard and stringy. One advantage in growing them for canning is that they may be planted closer because they are picked before they begin to crowd. I plant the seed in drills one foot apart and about four inches apart in the rows. In canning I generally quarter the kohl-rabi, but some of the smallest I put in whole. I place them in a muslin bag in boiling water. After ten minutes I dash them into cold water in order to shrink them. Even the small shrinkage which they undergo helps to make the cans full when the process is finished. Then I fill the cans or jars, packing in the pieces as solidly as possible. A teaspoonful of salt is put on top and hot water poured over it until the can is full, up to half an inch of the top. This both dissolves the salt and distributes it evenly throughout the can or jar. Then the cover is soldered on in the case of the can or the cover of the jar is laid on. The small centre hole of the tin can cap is left open, and the jar tops are only fastened lightly if at all. The cans are placed in the boiler with the water up to an inch of the top on the outside of the jars or cans and they are boiled for two hours. They are then taken out and the small centre hole is sealed and the cans are put back. If working with jars it is best to keep them in the water while clamping down the tight clamp, as a draft of air might crack the glass. The cans and jars are now totally immersed and boiled for two hours more. Then let them cool standing in the boiler as the water cools. I have also canned kohl-rabi and carrots together and found that the peculiar combination of cabbage and turnip taste in the kohl-rabi makes a pleasing addition to the carrot flavor.—*Curtis Fisher Day, Somerville, Mass.*

A Yellow Tree Peony.—The accompanying illustration shows the yellow Tree Peony, La Lorraine, raised by Lemoine from *P. lutea* and *P. moutan*, and of which a few plants are being grown by two or three prominent Peony growers of America. It was shown in splendid form at the recent exhibition at Philadelphia by Mr. Farr; Mr. Havemeyer has displayed it before the Horticultural Society of New York. The color is rich creamy yellow, with maroon red blotch at the base. Stems strong and woody. Foliage like the ordinary Tree Peony with purple on the midrib and petiole. It flowered for the first time in 1904, and has received numerous awards since—Paris, 1909, Ghent 1913, London 1913. The plant is apparently hardy. Our photograph was made at Rochester, N. Y., in June last.—*L. B.*

A Broomstick Scratcher.—The days of backache are here! The first fine ecstasy of beginning our gardens is over, and now the weeds crop up and the soil bakes and cracks. Any woman who isn't accustomed to using the ordinary garden tools finds them heavy and

cumbersome, and she is hunting for something lighter to break up the crust of the hard baked soil. The only thing on the market seems to be a little short handled cast iron scratcher that you have to get down on your hands and knees to use—a back breaking process.

There is, however, a very efficient little scratcher that any one with a little mechanical ability can make out of an old broomstick and a few feet of wire that will do more to lighten the drudgery of caring for a garden than anything else I know of. Mr. Harold Hume, of Glen St. Mary's, Florida, was the first one so far as I know to make one of these broomstick scratchers. In the light soil of Florida his little "Chinese garden" as he called it (that supplied all his vegetables), was cared for entirely with a little tool of this character. After seeing Mr. Hume's tool, Mr. Fairchild went to work and made a lot of them for our own use and for our friends, and we couldn't get along without them now. The teeth of this little cultivator are made of pieces of heavy wire bent



The "broomstick scratcher," easily made, is an effective lightweight tool

like the teeth of a rake, but there are only three of them and they are much longer and farther apart so that one can scratch all around and even over little plants. The teeth are held together either with some solder or else by twisting a finer piece of wire around them. This makes a tool much like the hand cultivator to be had at any store, only it is larger and much lighter in weight. The whole is then attached to the handle of an outworn broom. The completed tool is so light and so effective that it really is a pleasure to use it. It won't take out big weeds, those you will still have to pull out by hand, but if you use this little cultivator often enough the weeds won't have much chance to grow. The ground won't bake hard either if it is often stirred and the moisture will be kept in the soil.

When you have made one of these broomstick scratchers, as we call them, and have found out what a real help it is, make a few

more and give them to your friends, for if it is a patriotic duty to have a garden oneself, why is it not also a patriotic act to help one's neighbors make their gardens successful? Let us help all we can, and I know of no better way than to give them a tool like the one I have described.—*Marian Fairchild, Washington, D. C.*

More About Intensive Celery Culture.—Since reading in the June issue Mr. Allen's description of his method of raising celery by "the New Culture," I am led to think others might be interested in my method, which is even more intensive.

Last summer from a space containing about 170 sq. ft. I cut and sold at the wholesale price of eight cents a bunch, between \$20 and \$24 worth of celery. This 12

to 14 cents a square foot might easily have been increased to 20 cents if I had retailed. The soil was poor and looked utterly unsuitable for celery; but I had no better place vacant at the time. On July 17th, I set 600 plants of Golden Self Blanching and Easy Blanching celery in twelve rows of fifty each, the plants five inches apart

in rows and seven inches between rows; fourteen inches between every four rows thus making beds of four rows each. I had ordered a hundred pounds of cattle manure and the like quantity of prepared humus but did not receive these until nearly two weeks later when the mixture was applied between the rows and hoed in as well as could be done without injuring the roots. On August 28, I began cutting only two or three days after putting on the first celery bleachers and a week later was cutting from a dozen to a dozen and a half bunches daily. Though I put two stalks in most bunches many stalks were large enough to sell alone at ten cents. My garden had not had celery before, and by using the commercial manure and humus and watering daily and very thoroughly and spraying the young plants with bordeaux two or three times I had no trouble with rust.—*N. S., Virginia.*

A Bulb Planter.—Last season I made a very useful bulb planter out of simple materials. This enabled me to get my bulbs in at the best depth without any trouble at all. The point has recently been shown to be one of considerable importance for bulbs placed at too great or too little a depth do not give good results. As can be seen from the picture a stoutish stake was secured. This was between a foot and eighteen inches in length, and it was pointed at one end. At intervals in the stick holes are bored in the sides into which wooden labels can be inserted. Each label bears the name of a particular class of bulbs, and these can be inserted at the height most suitable for the kind. Thus Narcissus do best when planted six inches; that is the base of the bulb is this distance below the surface. The depth for Tulips and Hyacinths is four inches, and that for Crocuses and other small bulbs two and a half inches. Of course when using the planter only one wooden label is in at a

time according to the kind of bulb being handled.—*S. L. B., England.*

Tulips in the Window Box.—As a plant for the window box the Tulip would appear to have been neglected. As most window boxes are so securely fastened that to remove them means some little trouble, a box of tin or light wood should be made of a size to fit snugly into the window box. Into this second box, the Tulips are planted. Only the early or bedding varieties are recommended. A good potting soil will suit the bulbs which are set at a depth of about three inches so that they may be covered with at least two inches of the soil. They are spaced three inches. Settle the soil by watering freely, but do not pack down with the hand. Then bring the box outdoors in a well drained location, covering all to a depth of two or three inches. The Tulips will behave exactly as they would if set out in a bed for spring bloom. Naturally the boxes are to be prepared at the same time that bulbs for bedding purposes are set out. In spring when the Tulips begin to peer through the soil in the box, which can easily be determined by removing some of the extra soil covering, set the box into the window box where the genial warmth of the sun with good watering will develop bloom a little earlier than those in beds. On the other hand if you do not care to go to this trouble give your order to your florist and he can have the Tulips ready in time to shift them into the window boxes. Indeed, he can force the bulbs along a little bit and give you Tulip bloom as early as may be deemed safe in your locality. A hard frost will not interfere with the bloom of a Tulip and furthermore Tulips can be shifted when in bloom, though you will get the longest blooming period when they are shifted before the buds have opened.—*C. L. Meller, N. Dak.*

Making a Lawn in Fall.—This is an excellent time to remodel or make a new lawn. I speak from experience. A year ago I had a very unsightly lawn; originally it had been improperly graded, and, knowing it must at some convenient time be redone, weeds had been allowed full sway. The first of last September the lawn was peeled, and then gone over with pick and spade to a depth of fifteen or eighteen inches and all weed roots removed. The soil was then made very fine, heavily fertilized with bone meal, and at daybreak one fine morning when not a breeze was stirring to



Use Tulips for the window box. They give early color.

carry the light seed other than where wanted a combination of Blue-grass and Red-top (the best mixture, apparently, for this region) was thickly and evenly sown, being lightly raked in and rolled. Sticks with white strips of cloth tied upon the ends, which gaily waved in the breezes, were placed about and kept the sparrows from picking up the seed. Nature was kind, adding the last requisite, a gentle rain, and in a very few days the entire lawn was a most beautiful carpet of living green. Early this spring White Clover was very sparingly sown over the surface before it was rolled. Some weeds such as dandelion, plantain and dock, have appeared, as well as some annuals. No attention was given to annuals, but all perennial weeds have been carefully removed, a little soil and grass seed in each case applied, and the wound carefully patted down, and this procedure will be persisted in yearly. There is not a bare spot anywhere. The accompanying picture with its pleasing background of flowers and shrubbery, also fall planted, does not begin to give an adequate idea of this beautiful September made lawn. Not only is this time of the year desirable for the production of a good lawn, but fall usually affords greater leisure than spring; the experienced gardener realizes the necessity of doing everything which it is possible to do in the fall to relieve the congestion of the spring's work, and the making of a sizeable lawn is no small task if well done.—*R. R. A., Jamestown, N. Y.*

Late Strawberry Planting.—I was startled to read in August Garden Magazine that planting could be done as late as November 10—but then, New Jersey is not Massachusetts! We plant here in August.—*G. W. A.*

[—Of course the farther north the earlier the advent of winter.—*Ed.*]



Is fall planting practical?—Everything in the garden, shrubs, trees, lawn and border was fall set

THE MONTH'S REMINDER

PREPARE FOR THE HARVEST—GARDENING FOR THE WINTER—LATE WORK OUTDOORS

NO OTHER month in the garden calendar is so likely *not* to be used to full advantage by the average gardener as this fine month of September. With weather favorable for good growth; with cool late afternoons which still give opportunity for a little garden work "after hours"; with any number of things that can be done now instead of being put off until the crowded weeks of next spring—with all these there is little excuse for the gardener who cannot find plenty of opportunities for all his energies and his skill.

A Chance on Late Plantings

WHILE too late for many of the things which could be planted last month, there are nevertheless a number which can still be put in with a fair chance that they will "come through" in time. Even fairly well north, there are still some sixty days of growing weather probable. This means that radishes, lettuce, spinach, and turnips may still be planted; while even with early beans and beets one can well afford to take a "sporting chance." Beans that are protected from the first frost by leaves, hay, or irrigation are likely to bear a good crop afterward. Beets will of course not mature, but they will have time, with fair luck, to reach the size when they are most delicious for eating, and the tender roots may be canned.

Get Ready—And Then Get Busy!

WHILE a last pot shot at vegetable planting may be taken, still that is only a minor part of the month's work, and no good gardener will feel that he has "done his bit" of fall planting if he stops there. The plantings of perennials, shrubs, evergreens, and hardy bulbs that should be made during the next six weeks are among the most important things in the year's programme.

If your orders for all these things have not yet been sent in, *send them in at once*. No need of waiting to get catalogues. Better still, however, look through the advertising pages of this month's and last month's GARDEN MAGAZINE, and order direct from the items described and offered there. Don't be among those who feel that *this year* may not be the one to plant. Every tree and shrub you set out will within a very few years have added many times its own cost to the value of the place as a whole. Put *your* place in shape to command its share of the rising real estate values which the next few years will see.

"Plenty to Eat and Dry Feet"

THERE is no black art about fall planting; commonsense and care tell in good results. There are a few general principles which should be kept in mind for all fall planting. *Be sure the drainage is good!* This is even more important now than in spring planting, as the results of poor drainage are likely to be fatal, due to rotting or to freezing. To improve drainage prepare new beds or borders, or the holes where trees or shrubs are to go, by digging out and putting in a layer of cinders or some similar coarse porous material. If any of the spots to be planted are so low that the use of drain tile is necessary to carry off surplus water, by all means do the required draining *before planting is begun*.

Most of the plants set out in the fall will remain in the same places for a number of years, if not for life; and they need something that

will stay by them. They can get it in well rotted manure and coarse ground bone. For bulbs, hardy Lilies especially, the manure may better be omitted, and fibrous compost used in its place. A generous amount of ground limestone (*not* burned or caustic lime) will also be a good precautionary investment, except in the case of those few plants which prefer an acid soil, like Rhododendrons and their kin.

Getting the New Plants Transplanted

THE plants of various kinds, started in July or August for new beds or for wintering over, will require attention again this month. Unlike *dormant* plants set out in the fall, these things should make as much growth as possible *after transplanting*. Therefore set into permanent positions as soon as possible—that is, as soon as they are large enough to transplant well, and conditions for transplanting are favorable. Pansies, English Daisies, and other similar things which make a compact bushy growth will require no pruning back, but those with very large leaves, or tending to make a tall, single-stalk early growth, may profitably be cut back a third or so when being moved. A little tankage, chicken or sheep manure used when transplanting will help to keep these young plants growing vigorously until their natural time to cease growth for the winter; but *be careful not to overstimulate* them, especially if they have not been making very rapid growth in the seedbed, because of poor soil, dry weather, etc.

Putting the Garden Indoors

DON'T make the mistake of leaving plants designed for winter use, whether vegetables or flowers, where they are growing until actual freezing weather threatens. As soon as

DO THIS MONTH

1. Make the *last succession* plantings.
2. *Begin fall planting* of perennials, shrubs, etc.
3. Prepare *beds and borders* for late fall planting.
4. Get ready for *early harvesting*.
5. Build new *coldframes and hotbeds, and*
6. *Overhaul and repair* the old ones.
7. Put the *greenhouse* in shape for the winter.
8. Begin planting *under glass*.
9. Put in plants for *winter bloom*.
10. Make or remake the *lawn* now.
11. Keep the new *strawberry bed* in shape.
12. *Sow cover crops* wherever possible.

they are large enough to transplant shift to frames or greenhouse, to get established under conditions as nearly as possible like those in which they have been growing. Be careful to have the frames or benches filled with soil that is both rich and clean. One danger point in getting lettuce, or stocks, or pinks, or other plants into winter quarters under glass is the effect of the sun through the glass. Weak whitewash or other temporary shading on the glass (outside), or cloth sash or even newspapers over the plants, for a few days after transplanting, will help greatly in getting them used to their new quarters. Water should be given rather sparingly until they become established, but frequent sprinkling or syringing of the walks, benches, etc., if the weather is hot and bright, will be of very material benefit. A little nitrate of soda—using about a tablespoonful to the 12-quart watering can—will show marked results if applied as soon as the plants are well rooted.

Begin Planting Under Glass

GET started with first fall crops from seed, like radishes and beans; and also sowings for later plantings of lettuce. The more growth they can make with the sash off entirely, or all the "air" that you can give them, the better; they will be healthier, and you will not have to wait so long for the first good things from indoors.

The Early Frost Gets the Slow Gardener

EVERY two or three years old General Jack Frost catches a bunch of careless gardeners napping. He makes a flying trip without previous warning, and gets such easily injured things as beans, sweet corn, cucumbers, and tomatoes. Therefore the careful gardener takes pains not to get caught unawares as "first frost" date for his section approaches; *not the average* date on which the first occurs, but the earliest on which it has been known to occur—which is about three weeks in advance of the average. A week or more before that time, begin to reduce any surplus there may be. The tomatoes, of course, are good for any number of pickles and preserves. But in addition to that, the best of the full-grown but green fruits may easily be kept and gradually ripened by storing them in leaves or hay in a dry warm place—like an empty coldframe, with sash handy for cold nights and wet weather. Cucumbers gathered green and kept in a rather cool, moist place, out of the light, will remain in good condition for a long time, but if merely "touched" by the frost they will spoil very quickly.

Get Ready With New Frames

IF YOU have never before had a coldframe, make up your mind to get one ready at once. Even if you have to begin at the beginning in learning to "run" it, the practice you can get this fall will stand you in good stead in the spring. Moreover—the frame will be *ready for you!* Don't be in the army of "wishers" again next March. At a reasonable cost you can get your *frame*, as well as the glass "sash" which goes on top of it, all cut and ready to put together in a jiffy; nothing for the man who receives it to do but put a few bolts in place and dig a little hole. It will also be wise to thoroughly overhaul the old frames at this time. Every *cracked glass* in the greenhouse, even if it is in no danger of coming out now, should be relaid in fresh putty and made absolutely firm, or better still replaced with a whole new light, using the one removed, for a sash or plant forcer. A glass once cracked is almost sure to cause trouble later on—and at just the worst time.

Don't Forget the Winter Overcoat

IN THE rush of work there will be if you try to attend to everything that can be done to advantage this month, don't forget to put a cover crop on every square foot of the garden that is cleared, just as fast as it is cleared, or before. You can rake up the ground and sow *between* the rows of late crops, such as onions and carrots and late potatoes, and the last planting of sweet corn. The more green stuff you can have to fork or plow under in the spring, the better your vegetable garden will be next season. *Herein lies the first step in preparedness for next year's food campaign!*—[See page 58]



A good succession—three lots of Freesia in this greenhouse in proper relationship



Outdoors the hardy bulbs are excellent for naturalizing in wide stretches or in the shrubbery

Bulbs for Twelve Months, Indoors and Outside

W. C. McCOLLOM

ANY one ought to be able to get flowers from bulbs, because the flower is already inside the bulb when received and the process of development is so simple as to be almost mechanical.

As a class, bulbs will give great returns for the labor invested. The more common kinds will stand neglect and abuse with practically little, if any, result on their flowering. This, of course, does not constitute a reasonable excuse for neglecting them entirely, as they are very responsive to good treatment and indeed this elasticity in their culture makes them "every man's flower." Even without a greenhouse fresh flowers can be had—from bulbs—all through winter. For early flowers in the formal garden, where can you find even an acceptable substitute? For naturalization they excel. A strip of woods or a meadow bog can be made into a veritable fairyland, and what would a rockery be without its little Scillas and Grape Hyacinths.

Though bulbs are generally looked upon as spring flowers (it is true that the majority of those more commonly used, do flower in spring), there are others that flower during the summer and fall and, by proper selection, it is possible to have bulbs which flower every month, from the little Snowdrop in March, until September when the Fall Crocus (*Colchicum*) sends up its weird attractive flowers.

"Don't buy cheap bulbs." This is not given as a reprimand, but rather as advice. Bear in mind, that practically all individuals of a given variety look very much alike. Yet some might be dear at one cent each, others cheap at five



Before covering up to get root growth the bulbs are watered. Each lot is carefully labeled

At this writing there seems to be a reasonable prospect of an adequate supply of Dutch bulbs reaching America for planting this fall.

It has been officially stated that an agreement has been entered by all authorities concerned covering the necessities of the case.

It may probably be assumed, however, that the supply will be limited and the necessity of early reservations is apparent, for "first come first served."

It is also reported that a small supply of domestic grown bulbs will be available, but this source is not as yet developed sufficiently to offset the foreign conditions to any appreciable degree; and for some years to come, even under the best of circumstances, the domestic industry must of necessity be small.

cents each. These bulbs have been carefully selected by experienced men in the field where they are collected and sorted according to their value, and I am always willing to accept these experts' appraisal of value over my own judgment. I therefore make a practice of buying the best, which (I must confess, however) is judged on a price basis by going to a responsible concern. It is safe to shop on this method.

"Buy early, plant early," is another bit of advice that has been shouted so long and loud that it seems to be almost over-familiar, like the customary "Vote early" pre-election slogan of the newspapers. *But every day counts.* Remember that bulbs have a limited time in which to make roots to sustain them over the winter and the better the root system developed before the advent of exceeding cold, the better the results when flowering time arrives.

DO NOT imagine for a moment that by delaying your planting you are saving money because bulbs are getting cheaper. True, prices will be lower later on not because time is getting shorter, but simply because every selection from stock means that the better bulbs are taken out, until by the time the very cheap offers are made only the culls are left.

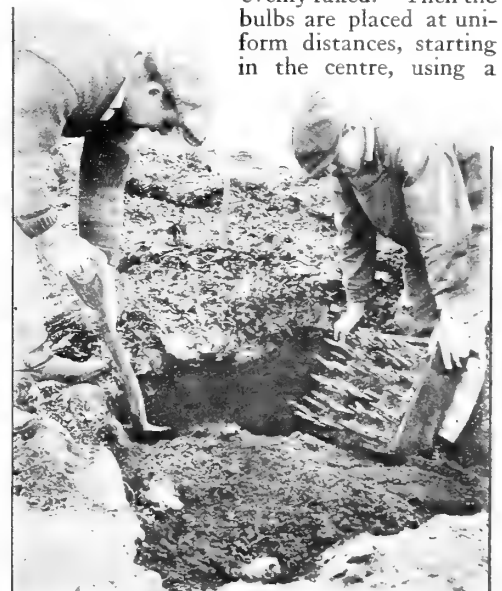
Like most other things, bulbs delight in good treatment. Good wholesome growing conditions; good things to eat, and plenty to drink. These given and good results are certain. In eatables they prefer well-rotted manure, spaded into the ground to a depth of

about twelve inches but, lacking this, decayed vegetation or fertilizer may be used. They are water lovers and some substance which is retentive of moisture will be most satisfactory. Manure, therefore, serves a double purpose; it catches and stores the moisture, subject to the call of the plant and, decomposing slowly, releases foods in about the proportion that the plants assimilate it.

The general rule for planting bulbs is to plant the bottom of the bulb about four times the depth of the bulb below the surface. In case of any divergence from this rule, I prefer deeper rather than shallower planting, as strong bulbs are sure to come through and the weak ones are a failure even under favorable conditions. Deep planting also encourages deep rooting.

Planting for the Greatest Display

FORMAL plantings offer a varied field of the most exacting nature. Of course bulbs selected for this purpose must all flower at one time in order to get the desired effect. It is also essential that all the varieties be in a combination of uniform height. Different varieties of the same type may be used to give some color scheme but do not mix Tulips and Narcissi, for instance. Beds for formal planting needs be prepared thoroughly, of an even texture to assure identic conditions. The customary method is to spade or fork under some manure, leaving the surface smooth and evenly raked. Then the bulbs are placed at uniform distances, starting in the centre, using a



Lifting from the outdoor trench ready to be taken inside for "forcing" into bloom

plank to prevent tramping the soil unevenly. The planting should be done with a dibber planting tool that can be made from the handle of a spade or fork sawed off about six inches below the grip. This is forced into the ground to an even depth, thus assuring uniform planting. Plant the bulbs from four to six inches apart and preferably on a little sand.

Dutch Hyacinths are specially adapted for formal plantings. They offer a good range of colors in shades of blue, red, yellow, and white



First step in potting. A layer of rough material to give drainage



Individual bulbs placed securely on the soil of the partly filled pot

bold colors in the Tulips and judgment must be used for the production of well blended color plantings. Double Tulips might also be used, but they flower later and must not be mixed with the early singles.

Late flowering Tulips such as Picotée, Maiden's Blush, Bridesmaid and other varieties, including the Parrot Tulips, are also fine when massed together. Each must be used separately; any attempt to mix them in formal plantings will result in failure. The "coup de maitre" for formal plantings is the beautiful Darwin Tulip, standing three feet high with long graceful stems and keeping for weeks in perfect condition. The range of colors is all that could be desired, carmine, maroon, rose, salmon, blue, white and almost a perfect black. They are worthy of a setting all their own in any garden.

Narcissus and Daffodils of various types can

well be used in formal plantings. The singles are by far the surest and most satisfactory but the sweet smelling Jonquils might also be included but not actually mixed—i. e., the true rush-leaved, not the so-called of the cut flower men which is a Trumpet Daffodil. When the garden consists of a number of beds, some might be devoted to different varieties such as the Jonquil, Poet's Narcissus, and the Polyanthus type.

After the bulbs have finished their flowering,



Finish off by pressing the soil firmly about the bulbs and covering their tops

and are extremely fragrant. Their solid masses of color and extreme earliness make them very popular.

Single Early Tulips of which there are numerous varieties ranging in the various shades of scarlet, crimson, red, yellow, orange, pink, violet, white, etc., are excellent for formal plantings. There are numerous strong,

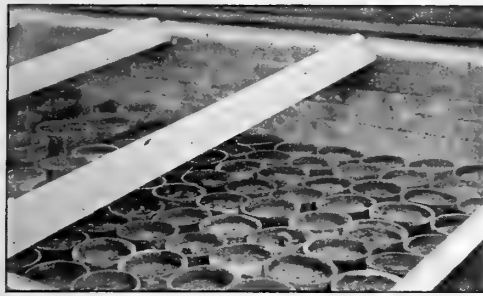
they may be lifted and placed on their side in shade, as somewhere on the north side of a building where the bulbs will ripen. Handled thus the bulbs may be used for several seasons; Narcissus even for a period of many years. Take care that the varieties are not mixed and that Tulips are not kept until they are a failure before replacing the bulbs. The space in the

Bulbs for Forcing in the Greenhouse or Dwelling

WHEN TO PLANT	COMMON NAME	BOTANICAL NAME	DISTANCE APART	DEPTH TO PLANT	SEASON OF BLOOM	HEIGHT IN INCHES	REMARKS
July-Nov.	Japanese Lily	Lilium speciosum	6-7 inch pots†	4-6 inches	Dec.-Apr.	24-48	Cold storage bulbs available for early forcing
Aug.-Sept.	Brodiaea	Brodiaea	4 inches	2 inches	Feb.-Apr.	12	Very delicate flower for cutting
Aug.-Sept.	*Freesia	Freesia refracta	3-4 inches	2 inches	Dec.-Apr.	12-24	One of the best of all for cutting
Aug.-Sept.	*Roman Hyacinth	Hyacinthus orientalis alba	4 inches	4-6 inches	Nov.-Apr.	12	Forces well; free flowering; very fragrant
Aug.-Sept.	*Madonna Lily	Lilium candidum	6-7 inch pots†	4-6 inches	Jan.-Apr.	36-72	Small flowering type; long spikes; good cut flower
Aug.-Sept.	*Easter Lily	Lilium Harrisii	6-7 inch pots†	4-6 inches	Dec.-Apr.	36-72	One of the best of all Lilies
Aug.-Sept.	*Calla Lily	Richardia aethiopica	6-7 inch pots†	4-6 inches	Dec.-Apr.	36-48	Requires rich soil and heavy feeding
Aug.-Sept.	*Little Gem Calla	Richardia aethiopica var.	5-6 inch pots†	3-4 inches	Dec.-Apr.	12-18	Miniature type of the Calla
Sept.-Oct.	*Flowering Onion	Allium Moly	4 inches	3 inches	Dec.-Apr.	12-18	Very free flowering but of unpleasant odor
Sept.-Oct.	Windflower	Anemone Coronaria	6 inches	1-2 inches	Feb.-Apr.	6	Grow cool; very showy; excellent for cutting
Sept.-Oct.	Mariposa Lily	Calochortus	4 inches	3 inches	Feb.-Apr.	12	Richly colored flowers; should be more grown
Sept.-Oct.	*Crocus	Crocus	3 inches	3 inches	Jan.-Apr.	6	Very pretty in pans and pots
Sept.-Oct.	Sowbread	Cyclamen	6-7 inch pots†	Just covered	Dec.-Apr.	12	Excellent for cutting or pot decoration
Sept.-Oct.	Italian Hyacinth	Hyacinthus amethystinus	4 inches	4-6 inches	Jan.-Apr.	6	Graceful flower for cutting; easily forced
Sept.-Oct.	*Dutch Hyacinth	Hyacinthus orientalis	4 inches	4-6 inches	Jan.-Apr.	12	Good range of colors. Both double and single forms
Sept.-Oct.	Cape Cowslips	Lachenalia	4 inches	3 inches	Feb.-Apr.	12	Uncommon bulb; pretty and worth attention
Sept.-Oct.	Jonquil	Narcissus Jonquilla	4 inches	4-6 inches	Jan.-Apr.	12	Old-fashioned but still popular; sweet smelling
Sept.-Oct.	*Chinese Sacred Lily	Narcissus orientalis	4 inches	4-6 inches	Nov.-Apr.	12	Sweet smelling type is excellent for mixing
Sept.-Oct.	Pheasant's Eye	Narcissus poeticus	3 inches	4-6 inches	Feb.-Apr.	12	One of the very best for cutting
Sept.-Oct.	*Single Daffodils	Narcissus Pseudo-narcissus	4 inches	4-6 inches	Dec.-Apr.	12-24	Contains both medium and large trumpet types
Sept.-Oct.	*Double Daffodils	Narcissus Pseudo-narcissus	4 inches	4-6 inches	Jan.-Apr.	12	Good for pans but rather heavy for cutting
Sept.-Oct.	*Polyanthus Narcissus	Narcissus tazetta	4 inches	4-6 inches	Jan.-Apr.	12-18	Contains several small flowering types; very good
Sept.-Oct.	*Paper-white Narcissus	Narcissus tazetta alba	4 inches	4-6 inches	Nov.-Apr.	12-18	Very early; invaluable for cutting
Sept.-Oct.	Guernsey Lily	Nerine sarniensis	5-6 inch pots†	Just covered	Jan.-Apr.	12-24	Another type of the Amaryllis
Sept.-Oct.	Star of Bethlehem	Ornithogalum arabicum	6 inches	4 inches	Jan.-Apr.	12-18	Very attractive; fine for cutting; should be more grown
Sept.-Oct.	*Oxalis	Oxalis	4 inches	2 inches	Dec.-Apr.	12	Very pretty for hanging baskets and pots
Sept.-Oct.	Buttercup	Ranunculus	4 inches	2 inches	Feb.-Apr.	6	Very showy for growing in pots or pans
Sept.-Oct.	Darwin Tulips	Tulipa Gesneriana vars	3 inches	3-4 inches	Feb.-Apr.	24-30	Cannot be forced early
Sept.-Oct.	Late Flowering Tulips	Tulipa Gesneriana vars	3 inches	3-4 inches	Feb.-Apr.	12-18	Several fine types for late forcing
Sept.-Oct.	*Single Tulips	Tulipa suaveolens	3 inches	3-4 inches	Dec.-Apr.	12	Earliest type of Tulip for forcing
Sept.-Oct.	*Double Tulips	Tulipa sylvestris	3 inches	3-4 inches	Jan.-Apr.	12	Showy for pots and pans in decorative work
Sept.-Dec.	Lily-of-the-Valley	Convallaria majalis	2 inches	Just covered	Oct.-Apr.	6	Cold storage pips make flowers available at all times
Oct.-Nov.	Sword Lily	Gladiolus	3 inches	3 inches	Feb.-Apr.	12-18	Cold storage bulbs are used for early forcing
Oct.-Nov.	French Iris	Iris persica	3 inches	3 inches	Jan.-Apr.	12	Grow cool; don't attempt to force until late December
Oct.-Nov.	*English Iris	Iris xiphoides	3 inches	3 inches	Jan.-Apr.	12	Grow cool; use light soil; feed freely after budding
Oct.-Nov.	*Spanish Iris	Iris Xiphium	3 inches	3 inches	Jan.-Apr.	12	Grow cool; excellent for cutting
Oct.-Nov.	Ixia	Ixia	4 inches	3 inches	Feb.-Apr.	12	Beautiful cut flower; must be grown cool
Oct.-Nov.	Sparaxis	Sparaxis	4 inches	3 inches	Feb.-Apr.	12	Grow cool; don't start too early; fine cut flower
Nov.	White Trumpet Lily	Lilium longiflorum	6-7 inch pots†	4-6 inches	Feb.-Apr.	24-48	Most satisfactory for late forcing
Dec.-Jan.	Belladonna Lily	Amaryllis Belladonna	6-7 inch pots†	Just covered	Feb.-Apr.	24-30	Very showy, flowers sometimes 9-12 inches across

* These are the best types for forcing in the dwelling.

† Indicates size of pot for single bulb.



Tender bulbs (Lilies and Freesias) are best put into a cold frame after potting

beds can be planted with other attractive bedding plants for summer.

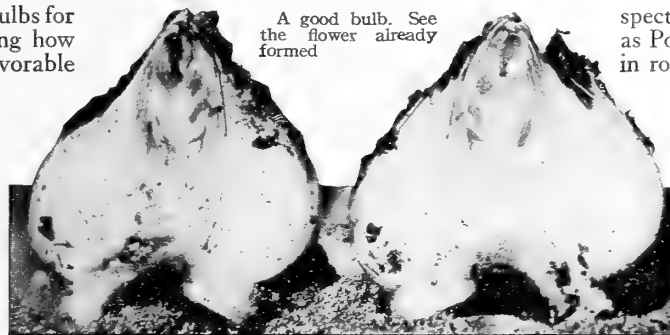
Wild Gardening in Wood and Meadow

ASSURED by one of the most effective uses for bulbs is the so-called naturalization planting. Only such bulbs as keep increasing are used, and they are planted in locations where they may remain undisturbed for years. Meadow bogs that are not too wet, wild gardens, around water gardens, woodlands which are not too dense, borders of shrubbery, etc., offer opportunities for the establishment of a permanent planting of bulbs. The Narcissus family unquestionably offers the best bulbs for naturalization. It is really astonishing how rapidly the bulbs will increase under favorable conditions especially in a meadow bog or in a strip of oak woods, where the late leafing of the trees is favorable to the development of the flowers below. Practically all the more popular types of Narcissus are available. The beautiful native Trillium is invaluable for woodland planting, its frail, delicate appearance always exciting admiration. In some places the old Tiger Lily can be used and will in-

crease very rapidly and several of the Japanese species of Lily, like *L. regale* are quite adaptable. The Alliums are best suited for wild effects and not the buttonhole use as, belonging to the onion family, they have the odor of their class. Around the base of trees, borders adjoining summer houses, placed where close inspection is invited, Lily-of-the-valley is invaluable. The flowers form a perfect mat in season and the foliage is attractive the year through. Other small-flower types that may be used are Hyacinth, Scilla, Grape Hyacinth, Crocus, Bulbocodium and Snowdrop. Anemone comes in many beautiful and brilliant colors and shades. The peculiarly colored mottled Fritillary, with drooping, egg shaped flowers will be found satisfactory for shady places, and the Mariposa Lilies (*Calochortus*) may be attempted, but it must have proper drainage and must be amply protected; if the soil be heavy, reeds, boards or other covers must be placed over the plants in fall to shed water as the bulbs will not stand the freezing and thawing conditions of the Eastern winter.

Rock Gardens for the Connoisseur

UNIVERSALLY the rock garden is fast becoming one of the most popular forms of specialized gardening. There is so much



A good bulb. See the flower already formed



Space under the greenhouse bench is used for the first step of forcing

ingenuity and originality about them that they attract the creative mind. Being comparatively new in popular favor, we are not confined to paths already hard traveled by others; each gardener has a chance to show what taste and constructive ability he has. Bulbs are indeed indispensable. Of course you use bulbs of permanent character and also avoid showy, gaudy colors, as the tone of a rockery should be subdued. Color? Yes! But quiet and refined, not like a formal garden in front of some large summer hotel. The aim is quite different, one is for effect and the other to attract closer attention and invite detailed inspection. The small flowering Narcissus such as Poet's, or Polyanthus types, are permissible in rock gardens; but the large flowering type will be out of place. All small flowering Cape bulbs (such as Snowdrop, Scilla, Grape Hyacinth, and Crocus), flowering at different periods from March to June offer material for a continuity of bloom. Alliums are among the best bulbs for rock garden planting; their thin drooping foliage and large umbels of dainty flowers can be had in yellow, white, and blue. Trillium must not be allowed to suffer

Bulbs for Planting Out-of-doors

WHEN TO PLANT	COMMON NAME	BOTANICAL NAME	DISTANCE APART	DEPTH TO PLANT	SEASON OF BLOOM	HEIGHT IN INCHES	REMARKS
Aug.-Sept.	Madonna Lily	<i>Lilium candidum</i>	12-18 inches	12 inches	June-July	36-48	Very fragrant; long spikes; excellent cut flower
Sept.-Oct.	Flowering Onion	<i>Allium Moly</i>	4-6 inches	4 inches	May-June	12	Very free flowering and showy
Sept.-Oct.	Windflower	<i>Anemone coronaria</i>	4-6 inches	3 inches	May-June	6	Must be protected over the winter
Sept.-Oct.	Meadow Saffron	<i>Bulbocodium vernum</i>	4-6 inches	4 inches	Mar.-Apr.	3	Very early and somewhat similar to the Crocus
Sept.-Oct.	Mariposa Lily	<i>Calochortus</i>	4-6 inches	4 inches	July-Sept.	12	Must be well protected over the winter
Sept.-Oct.	Indian Quamash	<i>Camassia camassia</i>	6-8 inches	4 inches	Apr.-May	18-24	Good cut flower; similar to the Anthericum
Sept.-Oct.	Glory-of-the-Snow	<i>Chionodoxa Luciliae</i>	4-6 inches	4 inches	Apr.	3	Very showy; good for rockeries and wild gardens
Sept.-Oct.	Crocus	<i>Crocus</i>	4-6 inches	3 inches	Mar.-Apr.	3	Fine for color masses in early spring
Sept.-Oct.	Winter Aconite	<i>Eranthis hyemalis</i>	4-6 inches	4 inches	Mar.-Apr.	6	One of our earliest spring flowers
Sept.-Oct.	Crown Imperial	<i>Fritillaria imperialis</i>	12-15 inches	9 inches	June-July	12-18	Fine bright colored flower; needs protection
Sept.-Oct.	Guinea Hen Flower	<i>Fritillaria meleagris</i>	8-12 inches	6 inches	June	12	Very odd drooping flower of peculiar colors
Sept.-Oct.	Snowdrop	<i>Galanthus nivalis, etc.</i>	4-6 inches	4 inches	Mar.-Apr.	6	The real harbinger of spring
Sept.-Oct.	Italian Hyacinth	<i>Hyacinthus amethystinus</i>	6-8 inches	6 inches	Apr.-May	12	A little more hardy than the Roman type
Sept.-Oct.	Feathered Hyacinth	<i>Hyacinthus orientalis</i>	6-8 inches	6 inches	Apr.-May	6	Very delicate; fine for cutting
Sept.-Oct.	Dutch Hyacinth	<i>Hyacinthus orientalis</i>	6-8 inches	6 inches	Apr.-May	12	Very sweet scented; showy bedding flower
Sept.-Oct.	Roman Hyacinth	<i>Hyacinthus orientalis alba</i>	6-8 inches	6 inches	Apr.-May	6	One of the favorites for cutting; fragrant
Sept.-Oct.	Wood Lily	<i>Lilium canadense</i>	8-12 inches	6 inches	May-June	12	One of our best bulbs for naturalizing in woods
Sept.-Oct.	Grape Hyacinth	<i>Muscari botryoides</i>	6-8 inches	4 inches	Apr.-May	6	One of the best for wild or rock gardens
Sept.-Oct.	Barrii Daffodils	<i>Narcissus Barrii</i>	6-8 inches	4 inches	May	12-18	Small cup type; very fragrant
Sept.-Oct.	Cyclamen Daffodils	<i>Narcissus cyclamineus</i>	6-8 inches	4 inches	Apr.-May	12	Very odd bell shaped drooping flowers
Sept.-Oct.	Jonquil	<i>Narcissus Jonquilla</i>	6-8 inches	6 inches	May-June	12-18	Very fragrant; excellent for cutting
Sept.-Oct.	Leedsii Daffodil	<i>Narcissus Leedsii</i>	6-8 inches	4 inches	May-June	12-18	Very effective small flowering type
Sept.-Oct.	Pheasant's Eye	<i>Narcissus poeticus</i>	6-8 inches	4 inches	May-June	12	One of the best for bedding and general planting
Sept.-Oct.	Double Daffodil	<i>Narcissus Pseudo-narcissus</i>	6-8 inches	6 inches	Apr.-May	12	Showy for color masses
Sept.-Oct.	Single Daffodil	<i>Narcissus Pseudo-narcissus</i>	6-8 inches	6 inches	Apr.-May	12-24	Very hardy and spreads persistently.
Sept.-Oct.	Scilla	<i>Scilla sibirica</i>	6-8 inches	4 inches	Apr.-May	6	Earliest blue flower in spring
Sept.-Oct.	Parrot Tulip	<i>Tulipa acuminata</i>	8-12 inches	6 inches	May-June	12-18	Very showy; splashed red and yellow colorings
Sept.-Oct.	Darwin Tulip	<i>Tulipa Gesneriana</i>	8-12 inches	6 inches	May-June	24-30	Best Tulip for general planting
Sept.-Oct.	Rembrandt Tulip	<i>Tulipa Gesneriana</i>	8-12 inches	6 inches	May-June	24-30	Variegated Tulip; tall and stately; fine for cutting
Sept.-Oct.	Single Tulip	<i>Tulipa suaveolens</i>	6-8 inches	6 inches	Apr.-May	12	Earliest flowering type
Sept.-Oct.	Double Tulip	<i>Tulipa sylvestris</i>	6-8 inches	6 inches	May-June	12	Effective for bedding and masses of color
Oct.-Nov.	Fall-flowering Crocus	<i>Colchicum autumnale</i>	4-6 inches	4 inches	Sept.-Oct.	3	Very odd flower, both in color and form
Oct.-Nov.	Lily-of-the-Valley	<i>Convallaria majalis</i>	12-15 inches	4 inches	Apr.-May	6	Plant clumps; soon grows to solid masses
Oct.-Nov.	Summer-flowering Hyacinth	<i>Galtonia candicans</i>	24-36 inches	6-8 inches	July-Aug.	30-36	Large spikes of graceful drooping flowers
Oct.-Nov.	French Iris	<i>Iris persica</i>	4-6 inches	3 inches	May-June	12	Excellent type; needs protection
Oct.-Nov.	English Iris	<i>Iris xiphoides</i>	4-6 inches	3 inches	May-June	12	Must be well protected to endure winter
Oct.-Nov.	Spanish Iris	<i>Iris Xiphium</i>	4-6 inches	3 inches	May-June	12	Fine cut flower; not a robust grower
Oct.-Nov.	Ixia	<i>Ixia</i>	6-8 inches	4 inches	May-June	12	Needs extra care to winter; fine cut flowers
Oct.-Nov.	Hybrid Lilies	<i>Lilium hybridum</i>	12-18 inches	12 inches	July-Sept.	24-48	Numerous very valuable garden varieties
Oct.-Nov.	Tiger Lily	<i>Lilium tigrinum</i>	12-18 inches	12 inches	July-Aug.	24-36	Effective in masses for color schemes
Oct.-Nov.	Buttercup	<i>Ranunculus</i>	2-3 inches	3 inches	Apr.-May	6	Good for borders and rockeries; needs protection
Oct.-Nov.	Wand Flower	<i>Sparaxis</i>	6-8 inches	4 inches	May-June	12	Fine flowers with extra care of winter protection
Nov.-Dec.	Liver Leaf	<i>Hepatica triloba!</i>	4-6 inches	4 inches	Apr.-May	6	Attractive little flower for the collector
Nov.-Dec.	Golden Banded Lily	<i>Lilium auratum</i>	12-18 inches	12 inches	Aug.-Sept.	24-36	Showiest of all the great family of Lilies

for want of water, especially after flowering. The small flowering Iris such as the Spanish, English, and French types are certainly most beautiful when used in masses. The Mourning Iris (*I. Susiana*) will respond to the good drainage conditions of the rock garden, and equally because of the steep grades and unusually good drainage such conditions afford, a number of so-called half hardy bulbs will find congenial quarters. These bulbs decay generally because of excessive moisture caused by the constant changes in our winter weather and, while that condition cannot be changed, its effect can be removed by proper mulching after the ground is once frozen and then in case of thawing, the excess of water drains away quickly.

Where the proper protection is applied and the grade is favorable, such bulbs as *Montbretia*, *Bulbocodium*, *Chionodoxa*, *Colchicum*, and *Camassia* may be used.

Growing Indoors for Early Bloom

ONE of the greatest assets of the bulb is its adaptability to house culture. There are two distinct methods; (a) in pots or pans with earth and (b) using water in glasses, etc. Either will give results; but the latter method utterly destroys the bulb which must be thrown away. My preference is for the former as it looks more natural.

For forcing in the house, plant the bulbs just as soon as they can be secured. They may then be placed in a cool cellar, or (preferably) buried out of doors until they make root. The bulbs, however, are hard to get at when wanted during winter, especially during snowy or heavy freezing weather; but when placed in the cellar they must be kept watered as all bulbs delight in an abundance of moisture. When the pots are filled with roots, it is safe to start forcing them as convenient.

The water method is essentially the same. Small glasses, holding one bulb, may be used; but better still use large bowls, about half filling them with clean white pebbles and a little broken charcoal to keep the water sweet. The roots cling to these white pebbles, and will give the bulbs support enough to keep them upright. The bowls or glasses are then put away in a dark, cool cellar until they have made sufficient roots. It is not necessary to change the water, but keep it filled up to a level, just at the bottom of the bulbs. When the water discolors and it is desirable to change it for sanitary reasons, the new water should be of the same temperature as that removed.

All Hyacinths may be forced in this man-

ner. Though the Dutch Hyacinth is most commonly used yet the Roman, Italian, and Miniature types are worth while and are quicker. Of the Narcissus family the chaste, fragrant, Paper-white Narcissus is perhaps the best, but any of the single or double Polyanthus or Jonquil types may be used. Early flowering Tulips are also easy for forcing in the



Here's a trick to be remembered in the spring. Covering bulbs that are pushing up flowers before the leaf growth is made in order to "draw" the leaves

house. Any of the "forcing varieties" which are simply extra early varieties, can be used for the dwelling.

The late flowering Tulips, such as the Parrots and the Darwins, can be forced in the house but not to bloom early; it is not safe to start the late flowering types before the middle of February.

Freesias will also do well in the house. These bulbs are not hardy and, planted in August or September, may be placed outside and covered with about two inches of ashes until the growth shows through. They may then be removed to a cellar which is not too dark because since growth has started it is not advisable to stop it entirely. These bulbs will not force well in water. The bulbs may be saved from year to year, in fact the stock can be increased by saving the young bulbs which form freely. This is not true of other forcing bulbs which once forced (in soil) are of no further value for this purpose. They may be

used for outside planting but not for forcing again. Crocus and Spanish Iris can also be forced in the house but neither will endure much heat. A cool window or the west side of a house where they get some sunlight will best suit. They must not be forced until they are thoroughly rooted. These two conditions cause practically all of the trouble that folks have in forcing these two bulbs—not waiting until the bulbs are substantially rooted or forcing them "too fast"—which means in too warm a place.

Garden Planting in General

FOR planting in border shrubberies and such like the hardy bulbs of all kinds are used according to the planter's fancy. In the perennial border or for mixing with other flowers of any kind Hyacinths are very useful. The beautiful Summer Hyacinth (*Hyacinthus* or *Galtonia candicans*) is one of the best bulbs we have, flowering in July and August its tall spikes of drooping white flowers are extremely showy. The Darwin, *Gesneriana*, late flowering Parrot, and both double and single early flowering Tulips are all available and indeed the problem is simply one of selecting those that please one's fancy and are suited for the conditions. The Daffodils afford some of the very best spring flowers and any place will be livened up with the cheerful yellow and white of these old garden favorites.

Lilies offer us opportunities that we should not neglect to seize. Some of the most beautiful flowers of the garden are in the Lily family and the majority of them are hardy if planted about one foot deep on a little bed of sand made to carry off superfluous water until the bulb gets rooted. The various Japanese Lilies, especially the attractive Orange Lily are fine subjects for the garden. *Lilium auratum* with its beautiful white with crimson spots and gold band; *Lilium Kiraetzerei*, an extremely large flowering white lily; *Lilium candidum* the Madonna Lily, small but extremely prolific; *Lilium Brownii*, and the beautiful tall *Lilium Henryi* of an attractive yellow.

Crown Imperials are unusual looking plants and could with advantage be used more in garden settings. This plant has large spikes of drooping crimson flowers that are borne in a terminal crown on a stem often two inches in length. Plant about nine inches deep and mound up the earth to turn water. *Fritillaria*, *Colchicum*, *Scilla*, *Snowdrop*, *Trillium*, *Allium*, and *Lily-of-the-valley* are all valuable. The management of bulbs in the greenhouse is discussed on another page.



Massed plantings before shrubs



Scattered plantings in rockery, etc.

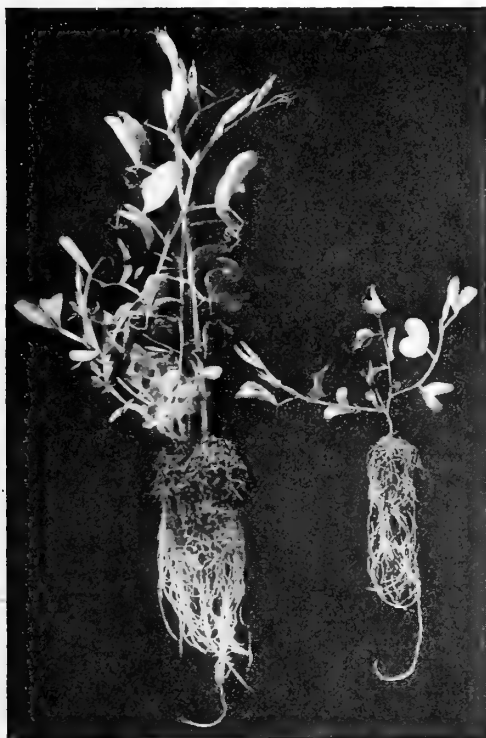
I Say: Sow Sweet Peas in the Fall for Early Bloom

G. W. KERR, President American Sweet Pea Society

[EDITOR'S NOTE: Quiet but potent influences work wonderful changes in living things as time rolls on. Sometimes the evidences are external, and readily observed, at other times they are far more subtle, resulting in changes of the internal vital processes. In the Sweet Pea internal changes have been very remarkable. The Spencer or large flowered type suddenly loomed into being, the plant otherwise being the same as of old; so also the Early-flowering habit crept up and after being recognized gives the start to a Winter-flowering or Early strain which differs from the family in that one thing. As a result Sweet Pea growing is revolutionized.]

Q. Why should Sweet Peas be sown in the fall instead of spring? *A.* Because results are so much better.

Q. Why are results so much better from fall sowing? *A.* Because the plants make a much stronger root growth under ideal conditions, come into flower several weeks earlier



A comparison of root development. Fall sown Sweet Peas make a greater growth and can better withstand drought

than from sowings made in spring, and give a much longer season of bloom.

WHEN sowing is delayed until spring it often happens that owing to weather and soil conditions we are not able to get on to the ground until well into April. What is the sequel? The seed may germinate quickly; but, toward the end of May and during June, when we usually have a spell of hot weather, the plants may be six to nine inches in height and the roots may have penetrated the soil to the depth of six inches—but what follows? The



An early April view of Sweet Peas sown second week of October, 1916, in frame. First flowers early in May

plants if far enough advanced may rush into flower, give a few small blooms, when, owing to insufficient root growth, they are simply cooked in the hot, dry weather, the plants take on a sickly yellow hue, and in course, die.

What about our fall sown plants? Assuming the seed is properly sown the plants will be well rooted even previous to the winter frosts, and although they may not make much top growth during the mild periods of weather which is usually sandwiched in between spells of frost, say from December until March, yet during all such periods *root growth is taking place*, with the result that when mild weather comes in March the plants may only be three or four inches in height, but the roots will have penetrated the soil to a depth of twelve inches or more, and top growth then commences in earnest. In this section (Philadelphia) such plants will begin blooming during May. If early varieties are used flowers may in early seasons be cut by the end of April, and the plants will continue blooming for many weeks.

Ideal Method of Sowing

TO THE best of my belief, and by the evidence of my own experiences, there is no chance of failure by the following method.

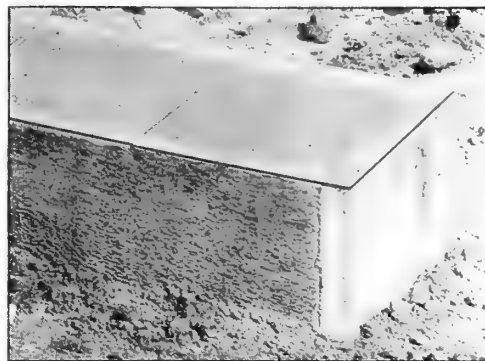
The ground has been well prepared by deep digging (trench two feet deep if possible) and thorough manuring, when cow or stable manure, old garden refuse, etc., may be incorporated quite liberally. Sow the seed during the second week of October, covering not more than two inches. Place boards, six to nine inches wide, on edge along both sides of the row, nine inches apart, make close at the ends. This little Sweet Pea frame must be covered later with glass, but the covering is not to be put on until severe weather sets in, and is always removed during warm mild spells. The seedlings will be three inches high before severe freezing weather. A slight frost will not harm them, and as Sweet Peas are impatient of any coddling, they should have all the air possible during mild weather, though it is well to have them covered during periods of excessive rains. The glass may be held in position by broad headed nails under which the panes of glass can be quickly placed. Or they may be secured with string attached to tacks driven into the boards.

When the weather opens up remove the glass entirely. This will be some time in March. The boards should remain in place to protect the plants from strong winds, but as a rule they may be removed by the end of March or early April, when the ground is worked around the plants and supports of brush, twine or wire trellis put in position that the vines may receive no check in their future development.

The Sweet Pea frame can be later used to cover early sowings of lettuce, or other vegetables.

Varieties for Fall Sowing

WITHIN the past few years a new race of Sweet Peas has been developed, namely the Early Flowering or Long Season Spencers. This is the type best adapted for fall sowing, beginning to bloom two or three weeks earlier than the summer-flowering Spencers; and,



Frame of wood sides and glass top covering the fall sown Sweet Peas. Can be used in spring for vegetables

when started in the fall, continues flowering quite as long as the regular type.

Among the best of the new Early Flowering Spencer sorts I have tried out and can thoroughly recommend are:

Early Enchantress, rich rose-pink self; Early Pink Beauty, large, soft pink; Early Primrose Beauty, cream, flushed pink; Early Rosy-Morn, rose with crimson standard; Early Sankey, large white self; Early King, crimson-scarlet self; Early Pink and White, reddish-pink standard with blush white wings; Early Loveliness, white, heavily bordered rich pink; Yarrowa, glowing rose-pink with creamy base.

If, in addition to the above, a few of the best of the regular



Early Spencer plants shown on the left as they appeared end of June,— been in flower since early May

Spencers are desired there are none better in their various colors than: Elfrida Pearson, bluish pink; Hercules, rich deep pink; King Edward Spencer, glowing crimson; King White, pure white self; Lillian, salmon pink; The President, orange scarlet; Firey Cross, glowing fiery-red; Constance Hinton, large black-seeded white; Margaret Atlee, rose-pink on cream; Royal Purple, rich true purple self; Wedgwood, light blue self; Orchid, the best lavender self; Barbara, rich salmon self; Illuminator, salmon-cerise.

Types for the Southern States, etc.

IN FLORIDA, and locations having a similar climate, Sweet Peas should be sown during the last week in September or

quite early in October, and by using the *Early Flowering* Spencers, flowers may be had from Christmas until May or June. The summer-flowering varieties sown at the same time, will not flower until April. Therefore for all tropical or almost frostless locations the new early or long-season varieties only should be used.

The new earlys are also the most dependable type for California, where in some sections, sown in September, they have been had in flower by Thanksgiving. A few degrees of

frost may check the plants and stop flowering, but they very quickly break away again, even if the leading flowering shoots may be spoiled, fresh growth is soon made to take the place of the destroyed parts.

This new type is now being grown almost exclusively in Australia, where they bloom during the cool winter months. In fact, by using these varieties, Sweet Peas may now be grown to perfection in many countries where the older type was practically valueless.

How Budding and Grafting are Done WM. H. WOLFF

HERE IS A MEANS OF INCREASING SPECIALLY GOOD VARIETIES OR WORKING OVER POOR BEARERS WITH BUDS FROM FRUITFUL TREES

THE simple art of budding and grafting, one of the fundamentals of modern horticulture, is seemingly a deep mystery to many people. By it we reproduce readily, easily and in any quantity many varieties of fruit and ornamental trees and plants which cannot be readily secured in any other way. It is perfectly practical for the home gardener to in this way increase the plants that best suit his purpose. There are

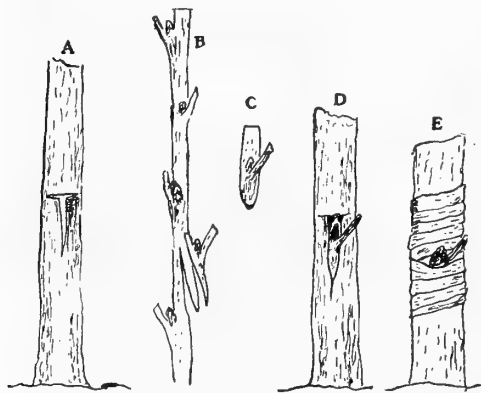


Fig. 1. The process of budding, which differs from grafting only in the fact that a single bud, not a short twig is used. (See text for references.)

two general methods of propagation: 1, Growing from seed; and 2, Taking pieces from the original seedling tree or plant and growing these pieces.

Budding and grafting is the practice of the second method. Seed propagation is usually easier and therefore cheaper and so is commonly used where only species or type characters are sought. Hence we propagate from seed the wild forest trees and plants, for example, the American Elm, the Silver and Sugar Maples, wild or species types of Roses, and many of our shrubs. A thousand American Elms grown from seed will show many individuals differing quite a little from the others, yet they will come near enough alike for all practical purposes. The same is true of the other wild trees and plants in which the type characters only are sought and considered.

In the case of our modern varieties of fruits, the case is altogether different. The first chief reason for noticing, saving and cultivating these was because they had varied so much from the general type and were so distinctly different from the general run of their seedling fellows; and these (the product of great variations from the type) possess thus inherent tendencies to vary. There are ten main characters of tree and fruit in which we

naturally would look for and notice variation, these are: *For the tree:* hardiness, vigor, productiveness, susceptibility to disease. *For the fruit:* size, form, color, quality (including flavor and texture, of the flesh), season of ripening, uniformity of crop. So, given a tendency to vary, and so many characters wherein a slight variation would make a large and noticeable difference, and we have the explanation of why we cannot resort to seed for the propagation of our cultivated varieties.

When seeds will not reproduce with certainty the qualities of the individual we desire to propagate, the only way is to take pieces of the original tree or plant and make these pieces grow, on their own roots if possible, or if these pieces do not have own roots or cannot make roots for themselves, we must provide other roots for them. Many plants can be so divided up that each part has a piece of its own root to start with, as for instance a Rhubarb plant, Gooseberry, or Spirea bush, about which the soil has been banked for a season. Some Roses and Grapes may also be propagated in this way. Other plants, such as Willows, Poplars, Grapes, Currants, many shrubs and soft wooded plants generally have the ability to make roots readily themselves from stem cuttings; and where this is the case the use of cuttings is the accepted method of propagation.

Apple, peach, pear, plum, and cherry trees cannot readily be grown from stem cuttings, or cuttings from terminal growth. We therefore provide other roots on which to grow the pieces or cuttings of the desired variety. This is grafting, which includes budding, or bud grafting.

Budding is to be Done Now

PRACTICALLY all the stone fruits, including peach, plum, and cherry trees are propagated by budding; about one half of the apple and nearly all the pear trees offered by the nurserymen are propagated in this way while the balance is obtained through root grafting.

Budding is distinctly a summer process and in the North is done during the months of July, August, and September. This is the time when the buds for insertion are fully enough developed and when the trees are making a vigorous growth so that the bark separates readily from the woody tissue below it. Terminal shoots from the current season's growth of the varieties desired are taken and with a sharp, thin bladed knife, the leaves are trimmed off, leaving back of each bud about one quarter inch of the leaf stem. This

serves as a handle for the bud later when it is being inserted. These "bud sticks," after being collected and prepared in this way, may be kept a short time if packed in damp material, such as sphagnum moss.

With our outfit now ready including bud sticks, sharp knife and some pieces of string or raffia cut into lengths of 18 or 24 inches, we proceed to the place where some little seedling trees are growing and which are to supply the necessary roots. Taking the first tree to be budded a T shaped cut is made, usually on the west or northwest side of the stem and about two or three inches up from the ground. The perpendicular cut is made first and then with a slight rocking motion of the knife blade, the horizontal cut is made, the flaps of the bark being at the same time thrown slightly open, Fig. 1-A. The bud with its bark and bit of leaf stem and without any woody tissue is now cut and pulled from the bud stick, Fig. 1-B, and slipped into the incision under the bark flaps on the seedling tree, Fig. 1-D. If the trees are in the right condition there will never be any trouble in getting the buds to slip in readily and easily. If the bark has to be pried up in order to get the buds in, the seedling trees are not in the best condition to bud and a large percentage of failures may be expected. The under-side of the bud rests on the cambium, or slippery layer, of the stock and it is from this that new cellular tissue is developed, which heals the wound and unites the bud to the new tree on which it is to grow.

After the bud has been placed in position, the flaps of the T cut are bound down tightly over it with a piece of string or raffia, so making practically an airtight joint, Fig. 1-E. In about two or three weeks the union ordinarily will

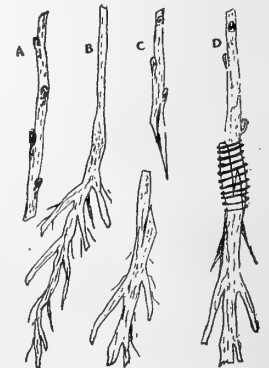


Fig. 2. Root grafting, a method commonly used for certain fruits and ornamental trees. A, Scion. B, Stock, a seedling topped and trimmed. C, Scion and stock cut for whip and tongue graft. D, graft made and tied

be complete and the string or raffia must then be cut to allow for the growth expansion of the stem. The following spring the seedling stem is cut off about an inch above the variety bud and as the season advances this alone is allowed to grow, all other seedling suckers—i. e. those that start below the variety bud—being kept broken off.

Grafting for Winter and Spring

GRAFTING is usually a winter or spring process. Root-grafting of apples is commonly done in January or February. The variety scions of wood of the previous season's growth are gathered in early winter and the seedling trees or "stocks," as they are called by nurserymen, are dug at this time and both are stored in damp sand or boxes of slightly damp hardwood sawdust in a cold cellar until they are wanted.

A whip or tongue graft, as shown in Fig. 2, is used largely in the propagation of apples. These whip grafts are usually made with a three inch piece of scion and a whole seedling root or sometimes only a piece of seedling root, two or three inches long. The value of the whole-root grafted trees versus piece-

root grafted trees has been urged and exploited for many years in the nurserymen's catalogues. For the first year, the whole-root grafted trees may grow a little faster than the piece-root grafted ones, since they have a little more root to start with, but in my observation, in a season or less the latter are as large, as vigorous and quite as satisfactory and after a short time the two kinds cannot be told apart. The grafts after being made as illustrated in Fig. 2 are wrapped with string—usually waxed—and packed in boxes of sand or hardwood sawdust and again put in the cellar to callous till planting time in spring when they are set out in good, rich soil, being set usually so deep that only the top bud of the scion projects above the ground.

For top-grafting the old-fashioned cleft

graft is the most satisfactory. The best wax we have found is made by melting together:

- 4 pounds rosin
- 2 " beeswax
- 1 " tallow or linseed oil

This, when melted, is poured into cold water and after slightly cooling is pulled like candy until it acquires a grain when it is wrapped in waxed paper and laid away until wanted.

The process of budding and grafting as explained above are similarly applicable to all kinds of ornamental trees and shrubs, with certain special modifications that experience may suggest. The same principles apply of course when grafting or "working over" the top of an old tree, for the basic principle is constant.



In the mixed herbaceous border for color



For semi-formal effects near the house

Plant Peonies in September

A FEW PRACTICAL SUGGESTIONS FOR THE USE OF THIS
SPLENDID PERENNIAL



Lift with plenty of roots



As a solitary clump in semi-shade



Division into pieces is easy

Handling Gallinaceous Fertilizer in a Practical Way

SHERMAN R. DUFFY ^{Illinois}

WHEN THE HUMBLE BARNYARD HEN PLAYS A COÖRDINATE PART WITH THE BELLIGERENT GARDEN CRAFTSMAN

BY WAY of introduction, the writer of this malodorous essay is his own gardener and any work done in his garden must be done by himself or by volunteer assistants—not always as helpful as enthusiastic. There are hundreds of thousands of citizens in the same predicament, more thousands this year than ever before. Since the Pilgrim Fathers laid the foundation for Plymouth Rock hens, there never has been such a wholesale horticultural attack upon the soil and there doubtless never will be in the history of the world so many dismal failures in a seemingly simple enterprise.

The chief cause for the many disappointments which I foresee in the vast army of new gardeners is the lack of fertilizers to be applied to the soil and a lack of knowledge of just how and when to apply them. Fertilizers are the most expensive item in the foundation of a garden and it is upon this uninspirational but essential subject, this unæsthetic, unbeautiful and unfragrant necessity and the cheapest way for the owner of the small garden to secure results that success depends.

The humble hen, no matter how barred her pedigree may be by barnyard mesalliances, producing her fruit at war time prices of five cents per fruit is a valuable asset for those fortunate enough to possess room to accommodate this gold bearing fowl who is making the fabled goose almost a reality.

But it is not with that high priced delicacy, the egg, that the gardener need concern himself so far as the cackling denizen of the barnyard is concerned. Horticulturally her exclusion from the garden is the main care owing to the speed and diligence with which she can destroy growing things. Nearly every one who has room for even a small flock of chickens has room for a small garden and the relation between the two is close if properly established. The hens can furnish sufficient fertilizer to speed the growth of vegetables or flowers during the entire season if properly used. It is becoming more and more difficult to secure barnyard manure, either cow, sheep, or horse manure to dig into the soil to supply humus and plant food or for mulching. Where a few years ago any one who wished could secure as much manure as he needed for the hauling or at a most nominal sum, now if it can be obtained at all, it is at a good round price.

To buy commercial shredded cow manure or pulverized sheep manure at the current rates of \$1.85 per hundred pounds is an expensive proposition. The commercial manures do not add the humus and texture to the soil.

FIGURING on the agricultural reports and making allowances for the enormous and in some cases prohibitive increase in cost of many of the elements entering into the balanced fertilizer, some of which such as the salts of potassium—muriate or sulphate—which formerly were spread over the Daffodil beds, cannot be secured at all, a flock of fifty hens provides in the neighborhood of \$75 worth of fertilizer in a year. This is estimated on the basis accepted some four or five years ago that 1,000 pounds of hen deposited a cash value of \$58 in fertilizer per year, an average sized fowl of the commoner types such as the Plymouth Rocks weighing from five to six pounds.

These figures under present conditions must be greatly increased and I am told that \$75

would be a very conservative estimate, as a matter of fact a precise estimate being uncertain, one authority declaring that the value of fertilizer has doubled at least in the last five years. However, be the figures what they may, the hen is a valuable asset for the gardener, a saving in cash in fertilizer alone.

Poultry manure is strong in plant food, but owing to the amount of ammonia generated it is difficult and dangerous to use it directly as it burns vegetation and cakes and hardens the soil and when dug into the soil is likely to scorch and destroy the young and tender rootlets. It is deficient in humus so there is nothing to be gained by digging it into the soil. How then can it be used to advantage? First and foremost, as a liquid manure. There is no better "tea" for the garden. Second, in compost with leaves, lawn clippings, dust, sawdust, land plaster, or in any combination that renders it dry and subject to thin spreading or mulching.

THE proportions which seem to furnish a liquid manure of the right strength—or more accurately, right weakness—are two pecks of poultry manure to one barrel, 31 gallons, of water. A molasses, kerosene, vinegar, or whiskey barrel may be secured from the grocer or druggist. Here again the H. C. L. rears its hydra heads. The grocerman formerly would present me with a couple of barrels without feeling himself at all generous. Now he has the gall to ask five dollars apiece. You can buy a steel tank for that.

Usually, I have had kerosene barrels. In order to eliminate the oil, drop a handful of straw into the barrel, light it and let it burn until the interior of the barrel is slightly charred. It will not only eliminate the oil but prolong the life of the barrel. Have an old carpet, rug, or something of the kind to drop over the top of the barrel when the conflagration is deemed sufficient.

While there are patent infusers on the market in which women and delicate men may assemble the manure to be placed in the barrel, they, too, add to the expense of gardening without contributing anything extra in the way of efficiency. A gunny sack does as well and can be procured for almost nothing.

Into this sack drop the two pecks of manure and then either drop the sack to the bottom of the barrel or better yet suspend it upon a wire or wooden hoop which may be fastened across the mouth of the barrel. Fill the barrel and let it stand a week. It really needs two barrels to alternate. Draw off the water which will be a light brown in color and apply it to the vegetables or flowers needing it. It will speed those that need and like rich feeding.

The most convenient way for arranging the barrel is to mount it on blocks, bricks, or boxes at a sufficient height to permit a wooden faucet to be inserted near the base with sufficient clearance for a watering can. This is a great labor saver and convenience as it is no joke to hang over the sharp edge of a barrel in order to dip up the water when the cask is more than half empty.

IN APPLYING the liquid manure it is best to moisten in advance the plants to be fertilized. This makes the liquid manure more quickly available and better distributed through the soil, going directly to the roots.

"Weak and often" is the motto for liquid manures. Once a week is often enough at most for the solution I have described here. It is particularly valuable for Roses when they have reached the bud stage and should be applied every two weeks early in the season and every week as the weather becomes hotter and more trying for the plants.

It is likewise excellent for onions in limited quantities. As a war measure, I am growing onions and Roses in the same bed. Soil that will grow good Roses will likewise grow good onions, and as this was the only soil I possessed that seemed likely to present me with good onions I double cropped it. At this writing I have plucked beautiful salmon pink Madame Leon Pain Roses and luscious young onions side by side. Both contribute to the lowering of the cost of living and to the joys of life in their peculiar spheres.

My onion-rose bed is the subject of much mirth and bromides concerning fragrance have turned to a stench in the nostrils. The combination works. The Onions and Roses are flourishing mightily. They do not interfere with each other and the appearance of the bed which is fifty by four feet does not suffer.

I have used liquid poultry manure upon cucumbers, squashes, and melons with excellent effect. Likewise upon Asters. Do not feed tomatoes; they will develop an excess of foliage and deficit of fruit.

THE only use I have found for poultry manure in bulk is upon the asparagus bed in the fall and winter. The asparagus roots are too far down and too strong to be injured while they respond gratefully to the extra food which seeps down to them. In the spring it should be either removed or spaded under as the heat is then gone from the manure.

The main problem is how to reduce poultry manure to a fine enough consistency to sprinkle it thinly or to combine it with some humus-producing medium so that it may be dug into the ground. In the first place, to secure the manure in condition to handle it readily, a substantial covering of dust, sawdust, straw, or dried lawn clippings should be spread upon the dropping board under the roosts. It should be removed at least every two days and placed under cover where it may dry. Frequent turning will break it up into fine enough condition.

An ingenious acquaintance had a bone grinder which he was not using for its original purpose and thought it might be a good idea to run some of the dried and crusted poultry manure through his mill to get it into condition to sprinkle. Unfortunately, he overlooked the fact that gravel is an important item in the dietary of the fowl and what happened to the mill when it hit the gravel in the manure spoiled the experiment.

However, the liquid manure is so much more efficacious and easy to handle that it is hardly worth while to try to use poultry manure as a mulch or to dig into the soil if any other source of humus and plant food is available.

After spreading the dry manure and either sprinkling it into the soil or allowing a rain to fulfil the same mission, the soil should be hoed. If left as it lies, it produces a hard, caked surface. It must be used very sparingly and care must be taken not to spread it too close to the stem of the plants.



Currants, grapes, and gooseberries are three timely suggestions for fall planting. Set out all possible food crop plants this fall

Plant Now—or Wait Till Spring? M. G. KAINS

RELIEVE THE SPRING PRESSURE OF TILLING AND PLANTING ANNUAL FOOD CROPS BY STARTING NOW WITH FRUITS, BERRIES, AND MOST ORNAMENTALS

ONE of the greatest advantages we gained by planting last autumn was getting the work done when other matters were not nearly so pressing as they were in the spring. Had we not planted in the fall it is very doubtful if we would have anything like as good trees as we now have. The fall set trees started into growth promptly and kept the lead all through the season. To be sure a few besides the clipped ones died and had to be replaced, but it is one thing to *replace* such trees and quite a different one to set out a whole planting. The former may be done much more quickly because there is no time lost determining the positions for the trees.

Another point strongly in favor of fall setting is the fact that the trees are dug only a few hours or days before being reset in the ground. They are therefore more likely to be in prime condition than are the majority of trees sent out in spring by nurserymen. This remark applies not to trees freshly dug in the spring but to those trees stored in "cellars" over winter. Whether stored in sand, sphagnum moss or "stacked up like cordwood," experience goes to prove that nothing compares with the newly dug tree. We had trees delivered last April, some of them stored in each way. Our results favored the spring dug trees in every case. The next best results were with trees stored over winter in damp sand. In the cases of nursery stock "stacked up" in the storage house we lost heavily, some of the trees being so badly shriveled that in spite of soaking root and top in water for more than a day—a good practice where the trees are at all dry upon receipt—we lost more than 50 per cent. and many of the balance will make poor trees. The nurseryman volunteered to replace this part of our order next spring. But we have done our planting for nothing, and lose a year because of the faulty method of storage. Here, then, is a good rule: *Before ordering nursery stock for spring delivery find out whether it will be spring dug, or if stored, how handled.*

What and When to Do, or Not

THE seasons of 1916 and 1917 gave us all of the 57 varieties of experience in tree and bush fruit planting. Some of these varieties were already well known to us but others were brand new and interesting from a practical standpoint. I, therefore, believe that readers of THE GARDEN MAGAZINE will

find a rehearsal a good guide as to what to plant, what not to plant, when to plant and when not to plant in this period of food urgency. Parenthetically let me say that when I use the word "we" I am referring to the experiences in two business orchards or small fruit plantations. Planting on my own suburban lot is thus kept distinct from the other work.

We ordered stock in October from five different nurserymen, all in Western New York, not that the New York nurserymen have better stock than others but solely because

most immediately after the receipt of our order. When the trees arrived we found that all the peaches of certain varieties had had their leaves clipped off and were already beginning to shrivel. I predicted serious loss among these plants, and sure enough when spring opened the majority died. In some varieties the loss was one hundred per cent. It is only fair to state that when the nurseryman was told of our ill success he offered to replace the trees either this fall or next spring as we may decide. This is all that any could expect under the circumstances, but we have lost a full year and have started with an irregular or ununiform orchard. So here is an important deduction for the reader to draw: *When ordering nursery stock for fall delivery insist that the trees drop their leaves naturally.* Be willing to wait until they do; for it is better to plant a well ripened tree even very late than to risk loss by planting earlier one that is immature. This rule is general, that is, it applies to all fruit trees and shrubs.

In all but one case our orders called for one year peach trees and not older than two year trees of other fruits. That one case was an accident: the specification of age was omitted. The nurseryman sent trees as old as four years in some cases. If these had been systematically root pruned each year, as is general in the production of specimen ornamental evergreens, to produce abundant fibrous roots they would have been splendid though costly. But they had not been so treated. They had either large roots fearfully mangled in the digging or in some cases the roots were so few and small that it seemed almost incredible that the large tops could have been produced and supported by them. The tops too (many of them) had badly placed branches which had to be removed, so the head of the tree could be made the proper height from the ground and the branches the right distance apart on the trunk. The result was a large number of big wounds. After this pruning was done the trees in many cases were unsightly, partly for this reason and partly because the breakage and removal of twigs left the main branches bare for considerable areas. But the worst is yet to come: those trees will never make as sightly, productive, healthy, hardy or in any other way satisfactory trees as younger trees have always made with less, far less attention both before but especially after planting. So here's the second rule the reader may write in his memory: *Insist upon having young trees unless*

Six Reasons for Fall Planting

- ¶ Newly dug trees are decidedly superior to stored trees, no matter how good the storage.
- ¶ When orders are placed late, it is a good plan to furnish a substitute list so the nurseryman may choose from this in case he has run out of the most desired varieties.
- ¶ The most important risks run in fall planting are danger of winter injury due to poorly drained land—and the gnawing of the bark by mice and rabbits.
- ¶ Heeling-in nursery stock is a thoroughly satisfactory way to store trees to be set in the spring, because you are not dependent upon the transportation companies at planting time.
- ¶ Early fall ordering is important, for at no season of the year is one so sure of getting exactly what he wants both as to variety, size, and age. In spring the nurseryman may be sold out of the very things you need most.
- ¶ Fall planting has the great advantage that the work is done and out of the way when time is not at a premium. Furthermore, most fruit trees and deciduous ornamental shrubs do better when fall planted because they get an earlier start than do spring planted ones.

we knew them personally or because they had the varieties we wished to plant. One of these men wrote that he thought it unwise to plant peaches in the fall, that he would advise his holding that part of the order until spring but that if we wished he would send the trees after the leaves dropped which would probably be about November first. As a matter of fact, it was about November 20th before the trees reached us. But such trees! Ripened to the very tips and branched almost the full length of the trunk. Except for one or two that were injured in transit every one of those late planted trees is doing well to-day.

Another nurseryman made his shipment al-

the older ones have been root pruned and discount 100 per cent. any thought that the older trees will bear earlier; for ordinarily handled nursery stock will not bear satisfactorily as soon and the tree will always be less plastic—can't be as easily trained. A few dealers have specially grown large trees however.

Cut Backs Declined with Thanks

ONE nurseryman wrote that he couldn't supply two-year apple trees of certain varieties but that he could send "cut-backs." We declined with thanks; for every nurseryman who will give his customer a chance to decline deserves to be thanked. Why? Because cut-backs are inferior trees. The first season in the nursery they are small, the second year they still do not reach the standard sizes suitable for sale, they are inferior in other ways or they are some the nurseryman has failed to sell. They would grow too large if left to continue growth next year so the nurseryman cuts them back to the surface of the ground. This results in forcing a strong shoot which in a single season produces a more or less sturdy and attractive looking top. But the roots, the important part of the plant, are then three years old and therefore must suffer severe injury when the trees are dug—often as severe as a three year tree suffers unless previously root pruned. As the nurseryman was willing to send one year trees of the varieties desired so the order was filled to our satisfaction. The third rule is obvious: *Never order or accept a cut-back tree because it was either a cull to start with or it was unsalable the previous year, both of which points are sinister.*

What Age of Tree

PRACTICAL fruit growers have less dispute than formerly as to the age of a tree for planting. All now agree that fruit trees more than two years old are undesirable for reasons already outlined. They also agree that peach trees should never be older than one year from the bud, for a similar reason. The only discussion one hears now is as to the relative value of one-year and two-year trees. Among the reasons for choosing one-year in preference to two-year trees the following are most important: They cost less; being smaller the express or freight charges are less; none but well grown sturdy trees are of salable size at the end of one season's growth, so there is no danger of getting runts or culls of the previous season; one-year trees have few, and small, or no branches so the head may be formed exactly where the planter wants to have it, high, low or medium, often without any pruning and



Ornamental shade trees and vines for the home and all hardy perennials for the border should be set out this fall to leave time free for food crop planting in spring

possibly consequent injury to the tree. The last point is more important than at first may appear because once having formed it is difficult to change the head.

Trees once headed high should be allowed to so develop because the new branches forced to develop by cutting off the first to form are almost sure to come irregularly anywhere on the trunks and to produce misshaped trees.

Most important point of all, however, is that one-year trees will transplant with greatest ease, least work, and most assurance of success, especially in the hands of an inexperienced planter.

Our experience in planting last autumn bears out that of other planters in being able to get the varieties we wanted. Only one of the nurserymen was sold out of one variety, whereas when we placed our much smaller spring order each of the three nurserymen we then patronized had no trees left of two to five varieties we wished to plant.

Things Best to Plant

THERE are some plants that should always, if possible, be planted in the fall; others must not. Among the former currants and gooseberries are conspicuous and ornamental shrubs (such as Lilacs) which ripen their wood and drop their leaves before mid-autumn and start to grow very early in the spring—grape vines also. *The sooner such things can be planted after their leaves fall the better.* If planted in the spring after the buds begin to swell or the leaves form they are sure to suffer more or less. Among the plants that probably are best not fall planted the most prominent are blackberries, dewberries and raspberries (especially blackcaps) red raspberries can be fall set on well drained land. The autumn before I arrived one of my clients set out a plantation with the result that with some varieties (blackcaps in all cases), not a single plant survived the winter. In other cases the losses ran from 25 to 75 per cent. The ones that suffered least were the Golden Queen raspberry plants. This is a yellow-fruited red raspberry! The loss in this case was only 5 or 10 per cent. It has been easy to fill the vacancies because the red raspberry makes numerous sucker plants from the roots.

As to grapes my own planting has turned out very well, no fall set vines dying from any but accidental causes. The plantings for one of my clients underwent a series of very severe tests, so did the gooseberries and currants which formed part of the plantation. They were exceptionally well planted last fall, but during the winter plans were changed and a sudden order given to have them removed.

They were dug on an April day when a gale was blowing. Each vine was temporarily heeled in where it stood, a couple of shovelfuls of earth being thrown over their roots. Before they could be collected and bundled for better heeling in a snowstorm buried them. Then without warning motor trucks began driving over them delivering hardware and glass to build a greenhouse. They were collected—such of them as were uninjured and could be found. After being bundled and heeled in several weeks elapsed before they could be planted, unfavorable weather preventing the preparation of the land. And yet the losses were only about 15 or 20 per cent. of the original number.

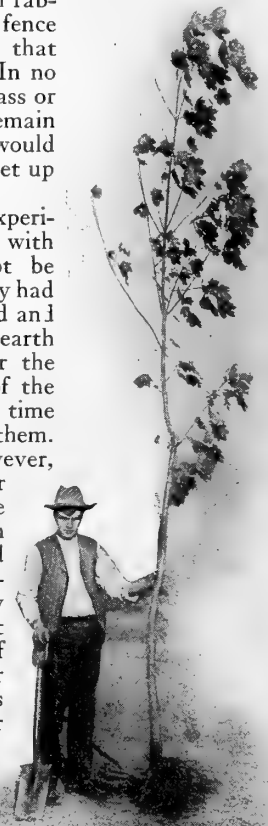
This shows how serious abuses certain plants will stand; for by knowing of such experiences the beginner may take heart and promise himself good results if he will only do the work properly.

Now the Disadvantages

AMONG the disadvantages, not already touched upon, that we weighed before planting in the fall are the following: we had to run the risks of winter injury due to alternate freezing and thawing with consequent heaving and settling of the soil. With fall set trees this is more likely to occur than with spring planted ones. But as our soil is well drained we felt that the risk was slight, and experience so proved for we lost only one or two from this cause. Another risk is the possible damage by mice and rabbits. But half inch mesh hardware cloth protectors were used on some of the trees; "sulfocide" on others. Not one tree was barked but this may be because of the abundance of food for both rabbits and mice in the fence rows and the woods that border the orchard. In no case was any dead grass or straw allowed to remain near the trees as this would have invited mice to set up housekeeping therein.

One interesting experience was in connection with trees that could not be planted last fall. They had been taken to the field and heeled in—that is, earth had been thrown over the roots and the bases of the trunks—pending the time when we could reach them. Winter arrived, however, and prevented their planting. Every one was in good condition when spring came and all but one are now living and doing well. Why that one died I don't know. The subject of "Fall Heeling-in for Spring Planting" was discussed in October 1916, page 102.

Don't be in too much of a hurry. Wait till the leaves are almost ready to fall.



Evergreen trees and shrubs are safely handled in early fall or when the ball is frozen

"Pay Your Money and Take Your Choice" F. M. THOMAS

Pennsylvania

CONTINUING LAST MONTH'S APPRAISAL OF RECENT OFFERINGS OF HARDY PERENNIALS FROM AN AMERICAN GARDENER'S VIEWPOINT—PLANTING CAN BE DONE THIS MONTH

FEW perennials give a more imposing effect in a flower garden, than a well-grown clump of *Helenium*, either *rubrum* or *Riverton Beauty*. I acknowledge that the striking and unique color of *rubrum* is a rather hard one to work into a definitely planned garden, but well placed it is a joy, and in any case there is always the shrubby border to fall back on. Any one who has seen a Wallflower can easily form an idea of the color of *rubrum*; a rich terra-cotta red, fading to a sort of burnt orange, a much purer and warmer shade than the older *Riverton Gem*. But it must positively be grown in full sun; even a little shade will metamorphose it to a dull bronzy yellow. *Riverton Beauty* is the richest lemon, with a brown-black centre, a far superior plant to the original *H. autumnale superbum*, though not growing quite so tall. I have sometimes wished that these *Heleniums* might bloom a little later, so as to be in harmony with the glory of the autumn colorings they so much resemble.

SOME *Day Lilies* (*Hemerocallis*) deserve attention; *Queen of May* and *citrina*. The latter is a most interesting plant. The long slender flower stems rise four or five feet high out of a mass of the most gracefully arching, narrow, fountain-like foliage imaginable. The flowers themselves are the palest lemon, tinged green on the outside, trumpet shaped, not widely expanded, and with very long, narrow petals. And their fragrance is delicious, probably finer than that of any other *Hemerocallis*. *Queen of May* is a plant of a very different sort, with coarse strap-like leaves, and sometimes as many as twenty flowers and buds on its stout branching stems. The flowers are funnel shaped, widely open; of a uniform deep chrome yellow. With me the plant has a second blooming season in late September or October and then the stems are much taller, some of them over five feet, but the flowers are sometimes so late as to be injured by the early frosts.



The Lemon-yellow Day-lily (*Hemerocallis citrina*) is one of the newer Chinese real acquisitions. Fragrant flowers on five foot stalks



Among the improved Sneezeworts (*Helenium*) is *Riverton Beauty*, rich lemon yellow with centre of brown black

H. Middendorffiana also blooms again in the fall, and occasionally, if the season has been a rainy one and the ground is rich, *luteola*, *apricot*, and *aurantiaca* will do the same; *luteola* is one of the finest pure yellow *Day Lilies* I have grown, only surpassed by *aurantiaca major*, which, however, is not entirely hardy here.

EXCLUDING Perry's White, the *Oriental Poppies* I mention are not very new. Nevertheless, they have become known surprisingly slowly, considering all their very apparent good qualities. Surely now that we have so many and such exquisite shades, it is about time to permanently discard the old *P. orientale*, with its glaring shade of brick-red. Of real scarlets we now have several; *Beauty of Livermere* (very dark), and *Goliath* (lighter), are all that could be wished. And of the salmon pinks there are a host. *Mary Studholme*, *Mrs. Perry*, *Jennie Mawson*, *Princess Victoria Louise* and *Princess Ena* are some of the best. Though there is not a great deal of difference on the whole, each one has its little point of distinction. *Mrs. Perry* is probably the largest and the most intense salmon; *Princess Victoria Louise* is a shade paler, with petals more numerous and more ruffled; *Mary Studholme* has a silvery tone, and *Princess Ena* is small and tulip shaped. To my mind *Jennie Mawson* combines the most good qualities, both in color and habit; *Silberblick* is a freak flower, with white spots instead of black ones, but the color is not attractive. The same is true of *Semi-plenum*, which, as its name implies, is partly double. *Perry's White* is a most curious and handsome flower. It has been described as "satiny white," but to me "paper white" would seem nearer right; certainly its texture distinctly suggests that of paper, rather coarse tissue paper, slightly crinkled. The spots at the base of the petals are really deep maroon, but they appear black, and there is something about the total absence of color that at once recalls a Japanese print. No doubt we can make very striking garden pictures with this variety, as it becomes better known. *Silver Queen*, another white, is of a different tone, a gray-white, or rather a lavender-white, if

such a term could be used. With its dwarf, slender growth, *Silver Queen* very much resembles an enlarged *Shirley*. *Mahoney* is unique; a very deep maroon red, like an ox-heart cherry. Nothing could be more effective with the salmon and white varieties.

OF THE new *Phloxes*, three seem to me of first class quality *Thor*, *W. C. Egan* and *Tragedie*. *Tragedie* (described as "carmine") is a pure deep scarlet, a scarlet with no hint of yellow, as in *Coquelicot* and its derivatives. For those who love brilliant and intense color effects, it should prove a great acquisition. Unfortunately it is not quite so robust a grower as some of the newer kinds. *W. C. Egan* has been described as "mauve," which gives no idea whatever of its clear, cool pink, a pink with less lilac in it than *Mme. Paul Dutrie*, but nevertheless inclining to the blue rather than to the yellow end of the spectrum. It has a centre of deeper, cherry pink, and the flowers and trusses are of unusually large size. *Thor* is the best deep salmon pink to date; a shade of the greatest richness, several degrees deeper than *Elizabeth Campbell*, but still distinct from the salmon-reds of varieties like *Baron von Dedem* or *Gen. Van Heutchz*. *Thor* also has blooms of splendid size. Happily the incomparable *Elizabeth Campbell* needs no recommendation; it has already become the most popular of *Phloxes*, and with good reason, possessing, as it does the most charming warm pink of any hardy plant. *Asia*, *Africa*, and *Australia* make an imposing appearance in some lists of novelties, but I am sorry to say that all three of the nations were a decided disappointment to me. *Asia* is of a rather muddy shade, *Australia* verges on the magenta, and *Africa* is a trifle harsh and crude, though by far the best of the three. One plant that should be welcome in every garden is the *Perry's Variety* of *Phlox divaricata*. Contrary to catalogue opinion, I pronounce it a distinctly paler shade of lavender than our native *P. canadensis*, but its flowers are so much larger, its habit so much



The Pale Blue Sage (*Salvia azurea*) though not new is a practical novelty to many. Useful both for border and cutting

better and its lifetime so much longer that it easily outranks that. From early May to the last of June it is full of blossoms. As a setting for pale yellow or old rose Tulips, or combined with Irises, such as *Flavescens* or Mrs. Alan Gray, it is perfect.

Perry's Variety, I understand, was one of the parents of the new *Phlox Arendsii*, a distinct race that has attracted a good deal of interest, and of which *Charlotte*, palest lavender; *Louise*, lavender with a darker eye; *Grete*, white; and *Helene*, much like *P. divaricata*, are all most promising plants, with semi-dwarf, branching habit and a very long season of bloom, beginning in May. The rest of the *Arendsii* varieties seem to me too uncertain and washy in color to be of much value.

IN SPITE of its cumbersome name, none of the newer plants possesses a more distinct and delicate charm than the *Thalictrum dipterocarpum*. Its foliage is in the same decorative, maiden-hair-fern style of all of its genus, but the flowers are totally distinct. The panicles of bloom are pyramidal in shape, tapering to a tip of undeveloped buds. The tiny flowers are suspended from thread-like stems, their soft lavender petals reflexed to show the fluff of pale yellow stamens below. The little round buds at the tip of the spray look like a shower of falling water-drops; buds and stems alike are tinted the same soft lavender. The

whole plant has an effect that is indescribably airy and delicate. My plants have not grown taller than four feet, but perhaps when well established they will attain the six credited them by the nurserymen. The one drawback is its sensitiveness to our damp and rainy winters. Cold seems not to affect it, but poorly drained soil is generally fatal. Therefore, I advise wintering it over in a frame.

OFTEN I have wondered why *Salvia azurea* is not better known. Its lovely soft blue flowers are splendid for cutting, and invaluable in the garden at their season. Perhaps now that the rather more showy *Pitcheri* has appeared it may help to bring more appreciation to the older but equally good type. The relation between the two is exactly that between the *Anchusa Opal* and *Anchusa Dropmore*. *Pitcheri* has very fine deep blue flowers, perhaps just a trifle smaller than *azurea*, and its season of bloom is two weeks later, extending into October. These *Salvias* should be given full sun, and, like *Chrysanthemums*, be pinched back at least twice during the summer.

The new *Salvia Greigi* has the same lip-like formation of flower as *azurea* and *Pitcheri*, but its color is a delicious soft cerise, very much resembling that splendid *Phlox*, Sigrid Arnoldson, or a newly opened Laurent Carle Rose. The plant is really a miniature shrub, about two and a half feet tall, with small, rounded,

strongly sage-scented leaves. If the number of its flowers was in proportion to the length of its blooming season, it would be invaluable; as it is, not enough flowers open at a time to make a very showy effect, though there are always more or less, from June to October, except for a short rest in August. It seems to be at its best in September, when, for a few days it quite covers itself with glory. *Salvia virgata nemerosa* is also a wonderfully prolific bloomer, though to insure this, the old flower heads must be religiously cut off. Its rich violet blossoms contrast well with the reddish purple bracts out of which they appear, but the plant is of no particular grace or distinction of habit. Perhaps the least attractive of the four *Salvias* is *uliginosa*; which is a great pity, as it is quite the most rampant grower I know of in hardy plants. Tiny seedlings, set out in July were by October big plants three and a half feet tall by two feet broad, and with dozens of flower spikes. These are very similar to *azurea* and *Pitcheri*, but the flowers are only about half as large, and not many open at once,—which again is a pity, as they are of a very pretty clear blue, with white markings. However, a mass should make a very good appearance in some corner of the rougher part of the garden, where their underground stems can spread at their own sweet will. In spite of its rampant growth, *Salvia uliginosa* is of doubtful hardiness north of Philadelphia.

Food and Home Economies That Can Finance the War

The Food Administration Says: To Save Food—

USE THE PERISHABLE FOODS.—Fruits and vegetables we have in abundance. As a nation we eat too little green stuffs. Double their use and improve your health. Store potatoes and other roots properly and they will keep. Begin now to can or dry all surplus garden products.

SAVE THE WHEAT.—One wheatless meal a day. Use corn, oatmeal, rye, or barley and non-wheat breakfast foods. Order bread twenty-four hours in advance so your baker will not bake beyond his needs. Cut the loaf on the table and only as required. Use stale bread for cooking, toast, etc. Eat less cake and pastry.

Our wheat harvest is far below normal. If each person weekly saves one pound of wheat flour that means 150,000,000 more bushels of wheat for the Allies to mix in their bread. This will help them to save **DEMOCRACY**.

SAVE THE MEAT.—Beef, mutton or pork not more than once daily. Use freely vegetables and fish. At the meat meal serve smaller portions, and stews instead of steaks. Make made-dishes of all left-overs. Do this and there will be meat enough for every one at a reasonable price. We are to-day killing the dairy cows and female calves as the result of high price. Therefore, eat less and eat no young meat. If we save an ounce of meat each day per person, we will have an additional supply equal to 2,200,000 cattle.

SAVE THE MILK.—The children must have milk. Use every drop. Use buttermilk and sour milk for cooking and making cottage cheese. Use less cream.

SAVE THE FATS.—We are the world's greatest fat wasters. Fat is food. Butter is essential for the growth and health of children. Use butter on the table as usual but not in cooking. Other fats are as good. Reduce use of fried foods. Save daily one third ounce animal fats. Soap contains fats. Do not waste it. Make your own washing soap at home out of the saved fats. Use one third ounce less per day of animal fat and 375,000 tons will be saved yearly.

SAVE THE SUGAR.—Sugar is scarcer. We use to-day three times as much per person as our Allies. So that there may be enough for all at reasonable prices use less candy and sweet drinks. Do not stint sugar in putting up fruit and jams. They will save butter. If every one in America saves one ounce of sugar daily, it means 1,100,000 tons for the year.

SAVE THE FUEL.—Coal comes from a distance and our railways are overburdened hauling war material. Help relieve them by burning fewer fires. Use wood when you can get it.

USE LOCAL SUPPLIES.—Patronize your local producer. Distance means money. Buy perishable food from the neighborhood nearest you and thus save transportation.

Buy less, serve smaller portions.

Preach the "Gospel of the Clean Plate."

Don't eat a fourth meal.

Don't limit the plain food of growing children.

Watch out for the wastes in the Community.

Full garbage pails in America mean empty dinner pails in Europe.

If the more fortunate of our people will avoid waste and eat no more than they need, the high cost of living problem of the less fortunate will be solved.

Here's the Thing to do With the Money Saved:

BUY LIBERTY BONDS BY YOUR GARDEN.—Spending the day in a hot canning kitchen or pulling weeds in the garden is a whole lot less dramatic for a woman, than dressing up in khaki and drilling and also a whole lot more useful; and it can save the money that will send a man to the front who is proud of the chance to go and proud of the quiet services at home that save the money that gives him a chance to serve his country.

BUY LIBERTY BONDS FROM WHEAT.—Put aside the money you save on limiting your wheat diet and put it into the hands of the Government so that the men at the front will have bread and guns and airplanes and whatever else they need to win. The food you save will feed our soldiers and our Allies and the money you save by saving food, if you buy Liberty Bonds with it, will be used to give our soldiers the equipment and training to give them a fair chance in battle.

BUY LIBERTY BONDS FROM MEAT.—Put aside the money you save by a meatless meal and by your care of left-overs and save it to buy Liberty Bonds. The Government will have to borrow 12 to 15 billions of dollars every twelve months for the conduct of the war. It must get a part of it from you.

BUY LIBERTY BONDS FROM MILK AND CREAM.—What you do not use will be used by some child who would have had to do without; and the money you saved, therefore, will help save the world for democracy if you give it to the Government in return for a Liberty Bond which makes you a shareholder in the great company of democracy.

BUY LIBERTY BONDS WITH FATS, and save anything else you can. The Liberty Bonds must be bought from savings. If you borrow to buy bonds it is permanent help to your country until you have paid off the debt and then the lender can buy bonds with your money. But if you save and buy bonds you are immediately serving your country.

BUY LIBERTY BONDS WITH SUGAR.—Sugar is sweet, but life is sweeter and thousands of lives a day are lost as long as the war goes on. Give the Government all the money it wants to give our army and navy everything it needs to hasten victory and establish a righteous peace.

BUY LIBERTY BONDS WITH COAL.—Save the fuel and the fuel bills. Every ton of coal that you don't burn will buy a quarter of a ton of shipping that is vitally needed—if you save the money and give it to the Government by buying bonds.

HOW TO BUY LIBERTY BONDS.—If you do not know where or how to buy Liberty Bonds go to the nearest post office, or bank, and find out; and then see that every one else in your neighborhood knows.

Get your money ready now to buy when the next loan is issued.

Keep right on saving so as to be ready for the loan after that.

See that every one in your neighborhood knows when and where to buy Liberty Bonds.

THE PATRIOTIC GARDEN

CROP CONSERVATION & DISTRIBUTION

He also Fights who helps a Fighter Fight (H-Hoover)

AT LEAST SAVE SOME OF YOUR WINTER SUPPLY

MAKE YOUR GROUND WORK FOR THE FAMILY & NATION

FALL PREPAREDNESS FOR THE SPRING DRIVE

OF ALL the seasons of the year autumn is the one in which preparedness in the garden is most effective. Yet most gardeners are inclined now to rest on their laurels till next year's urge is upon them. Now, when work is slackening up and slowing down, there is a chance every day during September, October, and November to do something that will fit the soil or the plants of hardy species for next season's greater successes.

Most obvious of all autumn work is the cleaning up of debris of crops which have been harvested, and left in their wake vines, tops, stakes, trellises, etc. *Waste nothing!* All such material as will easily decay and is otherwise useless is best disposed of in a compost pile where it will decay and become available for future use as humus. As far as possible gather it while succulent rather than hard and woody because decay is quicker. Better results will also follow spreading the refuse in thin rather than thick layers because decay is more prompt and there is less likelihood of the stuff being an offensive, sticky, wormy mass of decaying vegetable matter when the time comes to spread it on the garden as a top dressing. If stalks and vines become woody place them in a damp spot and cover with earth. They will thus more surely decay than if mixed in the ordinary compost pile.

A Friendly "Compost Pile"

AFAVORITE way of making a compost heap is to place a layer of inverted sods upon the ground or a layer of weeds, stems and other vegetable remains from the garden. Upon this two to four inches of good manure is spread and sprinkled with bone meal, tankage, ground phosphate rock or any other available but rather slowly soluble fertilizer. If the soil is acid a dressing of lime is given—enough to make the surface pretty white. Other layers of sod and manure are added until the pile is finished when the form should be that of a broad letter A with the apex cut off and somewhat dishd to hold snow and water. The depth of the sod layer should be governed by the character of the soil and the sod itself. If heavy loam or clay it should be shallow and about a third of its depth should be sand, sifted hard coal ashes (or other material) that will help to make it "lighter." If loamy already and well supplied with grass roots it may be four to six inches thick. Such a pile may be made in September or October for use the following fall or made in March or April to be used the following spring. In

either case it should be sliced with a sharp spade vertically downward and the slicings thrown into a new pile so that the outside of the original pile may be in the centre of the new one and thus get a good chance to decay. Soil so prepared may be sifted for indoor potting work or applied as it comes for work in coldframes, hotbeds, and garden borders. Piles may be six or eight feet wide at the base, four or five feet high, three feet wide at the top and any desired length to supply the needs of the maker.

Planting Next Spring's Greens

FOR the earliest crop of spring spinach sow in September or October. Choose the richest available part of the garden and make it even richer by a liberal dressing of well decayed manure. Dig or plow the soil deeply and make the surface fine. If the soil is somewhat heavy or poorly drained the plants may be heaved out by frost. To obviate this where there is no choice of a better location, dig a trench six or eight inches deep on each side of the bed and make the ground slope from the centre of the bed toward the ditches. These ditches should of course lead to lower ground where possible, but even where not they will be worth while. The soil from them should be thrown on the beds which will thus be raised slightly. For the overwintering crop, sow the seed in rows eight to twelve inches apart using about one ounce to each 100 feet of drill. Keep free from weeds until winter sets in, then cover with clean straw three or four inches deep. In early spring remove this straw, give a light dressing of nitrate of soda close to but not on the plants and cut the largest ones as soon as they reach edible size. Plants so grown may be used three or four weeks before spring sown seed will produce plants of edible size.

Dig the Garden Now

WORK and time next spring may be saved by plowing or digging the garden now, provided the soil be left in big clods, just as turned up. If it is a heavy loam or a clay so much the more reason for fall preparation because such soils are made finer by the alternate action of freezing and thawing during winter. Still more may be done to fine them by adding much old crumbly manure, sand and sifted hard coal ashes. Another important addition for breaking up the particles is the addition of lime but this should be deferred until spring because the action of lime is downward, so more or less of the plant food might be lost if the application were made in the fall. Just before the soil is ready for harrowing or raking is the right time to scatter this material.

Laying War Plans Ahead

IF NEXT year's war garden must be made on land which has been for a year or longer in sod its success can be enhanced by plowing the face say four weeks before the ground is likely to freeze hard. Apart from the advantages of having the sod decay and the texture of the soil improve because of the action of frost upon the clods during the winter there is a great gain in the destruction of insects which feed on the grass roots and which divert their attentions and appetites to the vegetable roots when these arrive. This is the greatest advantage of fall plowing or digging sod land. Wire-worms, cut worms, white grubs and many other garden pests are now feeding within a few inches of the surface as may be proved by turning up the sod and searching for them. While fall plowing does not destroy them all, it kills enough to make it, pay to say nothing of the advantages of having the soil turned up in rough furrow slices—as the soil should be left until spring.

Roots That Will Sprout in the Spring

IT WILL take a special order to your seedsman or nurseryman to get asparagus roots in the fall, but they can be had and you will save a year by planting early this fall. Two-year old roots are the most practical size for the home gardener. Horseradish and rhubarb set out this month will be ready for use in early spring.

Lift a few parsley roots from the garden, trim both root and top—the latter to within one inch of crown—and plant two roots two inches apart in a six-inch pot. A few pots in a sunny window will give all needed parsley when snow falls.



This season's harvest is nearly gathered in, but the alert gardener begins this month on rebuilding fertility for the food crops of next season. Feed the land to feed the people

★ Where FALL CANKER WORMS have infested apple trees or where the wingless females are noticed this autumn much may be done to prevent next spring's damage by placing bands of sticky stuff such as tar, printers' ink and "tangle-foot" around the trunks to prevent the females from climbing up to lay their eggs in the branches. Fluffy cotton batting is also useful. Late September or early October is the time to do this work. A related species, the worms of which work in the same way, may be similarly dealt with but by applying the bands when the buds swell. Spraying with lead arsenate (six to ten pounds to one hundred gallons of water) will control both kinds.

★ CUT WORMS may be made less numerous this fall and thus less destructive next spring by keeping the ground well cultivated in late and early fall so as to prevent the growth of grasses upon which the creatures feed. Where it is not necessary to have grass none should be allowed to grow. Where it is necessary, poisoned bran is effective because when properly mixed the worms will leave grass and other plants for it. A good formula is one ounce of paris green, three pounds wheat bran, mixed dry then moistened with the juice of an orange and enough diluted molasses to make the stuff "crumbly moist." Strew in little gobs beside the grass.

★ If not already done, CUT OUT ALL FRUITED AND DYING CANES of raspberry, dewberry, blackberry and all currant and gooseberry canes older than three years; the former because they will die anyway this winter and only menace the health and well being of the young canes; the latter because they produce fruit inferior in quality and size and less in quantity than do canes a year or two younger. In both cases the danger of infestation from insects and diseases is greater.

★ FRUIT-TREE-BARK BEETLES make "pin holes" in the trunks and branches of failing fruit trees. Prevention consists in keeping the trees vigorous and healthy by proper cultivation. If the trees are seriously infested cut them down, burn at once, and replace by new trees from the nurseryman this fall. It is a help to keep the fence rows clean of rubbish and to apply thick coats of whitewash or of concentrated lime-sulphur during late September, March, and June.

★ To feed VINES AND FRUITS economically, save all bones from the house and those left upon the lawn as canine visiting cards. Bury near grape vines, currant, raspberry and other bushes. No danger of getting too many. Half a peck to a peck will be a good "meal." Be sure to bury deep enough—say 15 to 18 inches. Obnoxious cats, dogs, rats, mice and other animals that eke out a precarious existence may be humanely exterminated and buried near fruit trees and shrubs. Such creatures might be obtained from local societies for the prevention of cruelty to animals and thus put to use in nature's way.

★ If the CHERRY LEAVES have been eaten out and blistered or browned during early or midsummer by the cherry leaf miner the best thing to prevent damage next season is to plow the orchard or dig beneath the trees in the garden during late October or early November so as to destroy the larvae which burrow in the ground to hibernate.

CHECKING THE INVADERS

Bugs, Worms, Rusts, and Frost

★ Mid-autumn is the time to dig out the PEACH BORER which almost always makes its burrow within six inches of the surface of the ground above, or usually below. Remove the earth gently to the depth of six inches and wherever a collection of peach gum and sawdust-like "castings" is found, use a penknife to search out and destroy the worm. Don't fear to cut the bark if necessary to find him. You will do less damage than he will. Leave the earth scraped away for a couple of weeks so upon a second examination you may find any that you have missed the first time over. There's no harm in leaving it thus for a third examination, say a month after the first. Before winter fill up the hollows, tramp the earth down hard and then make a cone-shaped mound of earth say six inches high around each tree. Leave this until spring as a protection against mice and rabbits. In early June, another mound may be raised so as to compel the peach borer moth to lay her eggs higher up on the trunk than the ordinary level of the ground surface. This she will do usually about midsummer. The borers are hard to find before September.

★ In many parts of the country, particularly where the soil is heavy and poorly drained, BLACKBERRIES, DEWBERRIES and RASPBERRIES suffer from winterkilling. The damage may be considerably reduced or even prevented entirely by laying down the canes at the approach of winter. The simplest way to do this is to start at one end of the row, and with a many tined "D-handled" fork press the canes down until they reach the ground. To hold them thus the fork need only be thrust firmly in the soil until enough earth has been placed upon them to hold them down. Then the next clump of canes may be laid over the first one and the process of covering repeated. Much greater speed may be attained where three persons work together, one pressing and holding down the canes while the other two do the covering. It is usually not necessary to cover the entire canes because enough leaves and other autumn debris is generally caught and held to aid materially in protecting them. In spring when wild berry bushes begin to show signs of life, or preferably not before currant and gooseberry bushes show their first leaves, the earth may be shaken out with a fork, the canes pruned and tied up for the summer.

★ As soon as the ASPARAGUS TOPS begin to turn yellowish and the berries begin to redden they should be cut and placed on the compost pile to decay. Otherwise the seeds will fall upon the bed and give rise to new asparagus plants which are not needed. If the plants have been diseased (rusted) the tops had better be burned without delay. After the cutting a thick dressing of manure to serve both as mulch and fertilizer may be applied. While some people advocate fall setting of asparagus, it is generally best to wait until spring because unless the ground is in ideal condition (especially as to drainage), the fall set plants may be injured. A warm soil and a sunny exposure favor fall setting as well as the production of early spears. Distances between plants and rows vary with individuals. Some people plant 2 x 2 feet; others 2 x 5 or 6 feet so as to utilize the space between rows for

early maturing crops such as radishes, lettuce, beets, carrots and cabbage.

★ WHITE GRUBS, WIRE WORMS and other insects whose habits of living are similar may be in part controlled and damage to succeeding crops prevented to just that extent by plowing during mid and late fall because such practise destroys the hibernating quarters or so disturbs the creatures that they fall victims to frost. By this practise also much of the food—grass roots—upon which they feed will have decayed by spring so that many will then starve. But since many are likely to live in spite of all this it is well to delay planting until late and then avoid all crops specially susceptible to these attacks; for instance, strawberries.

★ Do your bit to reduce the number of WORMY APPLES. How? See to it that no "worm" escapes to form a chrysalis. Gather up all the apples that fall prematurely because they contain worms and feed them to pigs, poultry or other domestic animals that will eat them. Failing such sources of consumption bury the worthless fruit and make the balance into sauce or other canned product, being careful to burn or bury the parings and cores. Put wire screens on the storage cellar so the moths cannot escape to lay eggs next spring on the early formed fruit. During favorable days examine crevices in the bark of the trees and destroy all hibernating worms and cocoons so found. Indeed, it is a good plan to place bands of burlap around the tree as early in the fall as possible.

★ TWO KINDS OF BORERS are common in apple trees; the round headed and the flat headed. The former is most often found near the surface of the ground above or below; the latter anywhere on the trunk or main branches. Clean culture and washes (such as lime-sulphur or caustic potash added to soap solution until the mixture becomes creamy) are fair preventives. But to make sure a careful examination of the trees should be made in early fall and another two or three weeks later. All borers (discovered by their castings) should be dug out with a knife and killed.

★ THE SAN JOSÉ SCALE is specially defenceless during late fall and early winter because the insects are then immature and their scaly coverings are softer and more easily penetrated. Spraying first with a twenty-five per cent. oil emulsion (scalecide, or some such special preparation), during mid to late autumn or with winter strength lime-sulphur solution will prove effective with even rough barked old trees. A second application of either spray may be given with profit just before the buds break in spring; after the foliage appears, the spraying solution must be reduced to "summer strength."

★ The PEAR PSYLLA, a tiny sucking insect, hides in crevices of the bark over winter and does much damage both directly by sucking the sap and indirectly by its "honey dew" secretions which are followed by blackening of fruit and foliage. Scrape and burn the bark in November, December or March, and then spray with "black leaf 40" or other commercial nicotine preparation, three quarters pint to 100 gallons and five pounds of soap. Miscible oil or scalecide at the rate of one gallon to 15 of water is also effective. Spraying must be done when the temperature is above freezing.

Stretching the Calendar

LENGTHENING the season of fresh vegetables by several weeks beyond frost dates is quite practical, by giving slight protection. A coldframe is simply a box-like structure, with or without cover, made of any boards, the wider the better, and supported by stout posts. It may be constructed anywhere though a fence at its northern end, or a clump of trees will help its efficiency.

In a straight line, drive short, strong posts, about 3 feet long, 3 feet apart, to a depth of one foot. Six feet away and preferably to the south drive a second row, equally spaced, 18 inches deep. Nail boards to these posts on the outer sides and your frame is ready. Now dig up the contained soil, mixing in some well rotted manure, or some "complete" chemical fertilizer and sow seeds, as suggested elsewhere. Such a frame will enable you to grow some extra early beans and beets to maturity as well. Seeds may be sown in close rows; six to eight inches for lettuce; radish, four inches. It is really surprising what a vast amount of stuff can be grown on a limited area, if the space is handled systematically.

When nights get so cool as to become frosty, cover the frame with boards to which may be nailed mats or burlap or any kind of material that will keep out the cold. Uncover in the morning; cover at night. Later on the frame may be converted into a very serviceable hot-bed—but that's to be told of in next month's GARDEN MAGAZINE.

Fall Strategy for Late Crops

THIRTY days (region of New York) separate us from the earliest recorded frost of the season—the average date is three weeks later, however. It seems absurd to talk of starting a vegetable garden at this time. And yet, nearly ideal "growing weather" prevails the biggest part of this month. More

SKIRMISHING ALONG THE FROST LINE

than a dozen extra early semi-hardy vegetables may still be sown for foodstuffs outdoors, if you press into service, toward the end of the month, some simple devices to keep off the frost. Vegetables that are semi-hardy and that will endure considerable frost if gradually hardened are lettuce, onions (from sets), peas, radishes, spinach, and turnips.

Onions from sets will not yield until spring; but by planting out either Egyptian Winter or multiplier or potato onions this month, you

may gather green onions when your neighbor gets ready to plant his sets.

Peas. Sow first week of this month. Such early varieties as Market Surprise or Pedigree Extra Early, etc., will mature where no "killing" frost disturbs vegetation before October 20th. Sow late peas in double drills, about 2 inches deep, 4 inches between the drills and 18 inches between these double rows. Four 15-ft. rows, handled in this fashion, will yield 2 good messes of pods before frost. Thus planted in a compact area, they are easily cared for and protected from severe cold.

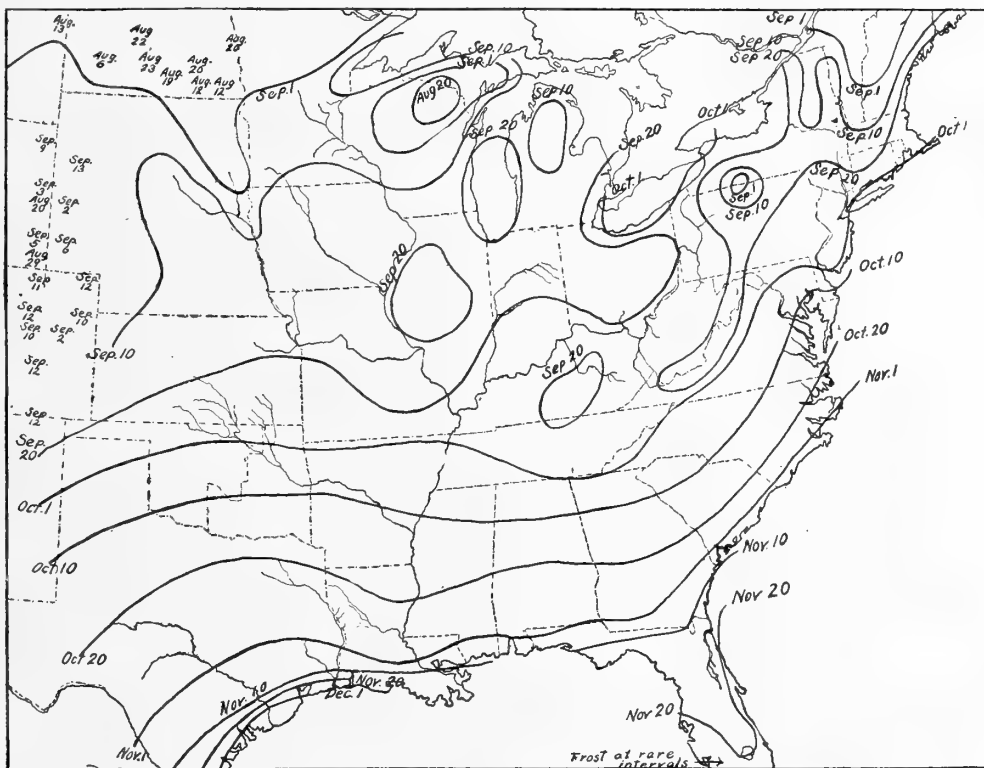
Lettuces that will reach edible size before frost injures them are Early Curled Simpson, and Prizehead among the loose-leaved kinds; May King, Naumburger and Big Boston among the butterheads; and Crisp-as-Ice as a crisp or cabbage head variety. To grow them to full size, the protection of a coldframe or some such device is necessary—a few boards, nailed together in box-like fashion will suffice even.

Radishes of the extra early round turnip and olive-shaped types that will reach full size by end of month from seeds sown at the beginning are Hailstone, Snowball, Rapid Red, Red and White Olive-Shaped, and French Breakfast. Sow thinly, thin promptly, water and cultivate freely.

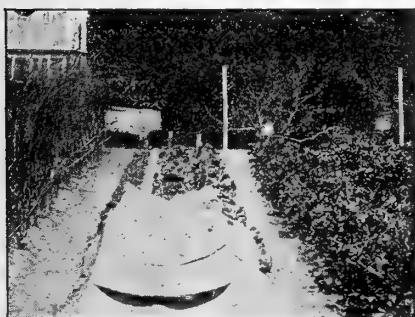
Spinach endures considerable cold, and with a slight protective mulch of straw or dry leaves will go through the winter in

the latitude of New York. Frost Resistant Munsterland is the hardiest of all, but it may be impossible to get seed, because of the embargo on Dutch spinach seeds. Sow at once Prickly or Winter, Victoria or Long Standing Prickly to furnish "greens" by October and again next spring.

Turnips. The Milan varieties will reach the desirable 2 inch size by end of October from seeds sown early in September. This crop, like radishes, will develop very quickly if seeds are sown



"Forewarned is forearmed." This map shows the earliest recorded frosts. The average date of expectation is about three weeks later. Prepare for the unexpected!



Late and tender crops of vegetables may be saved for two or three weeks by adequate preparedness. Lettuce (left) and beans (right) covered with handy cloths on the threat of frost. In the centre: egg plants; the one in front was covered by an old barrel, the others were not. Take the hint?

thinly and the seedlings promptly thinned to 3 inches apart.

Snatching Victory from Frost's Assaults

TIMELY cultivation and systematic watering will keep crops growing and in full vigor. Any backward crops of cabbage, celery, lettuce, cucumber, bean (anything other than root crops) can be urged on by weekly watering with nitrate of soda solution

made by dissolving a teaspoonful of nitrate of soda in four gallons of water—failing this use sulphate of ammonium or plain household ammonia equally diluted.

Tomato vines must now be severely pruned, cutting out superfluous branches that have borne fruit and "suckers" that develop at leaf-joints and at the base of the plant. Trim the tops of every branch, and *cut off every flower*, for remember, *tomatoes require from 30*

to 50 days from date of pollenization to develop to fair size and frost is likely to come soon. Remove some foliage, to give the sun free access to the fruits.

Blanch celery by means of earthing up or using paper or cardboard "blanchers." It stimulates the growth, improves the quality and acts as insurance against unexpected frosts. If crops get frozen remember: to preserve them is to spray cold water on them before they thaw.

ONE factor of prime importance to every garden owner who looks forward to next year's production is the growing difficulty of procuring an adequate supply of fertilizer to add to the natural food stores of the soil. Chemical fertilizer is becoming more and more difficult to procure, and in many parts of the country stable manures are almost unobtainable. And yet to the gardener who looks forward and plans ahead the prospect is not as gloomy as might be supposed. In the best of circumstances chemical fertilizers are a short cut, an easy means of attaining an end necessitated because the course of management of the land has been exhausting, not enriching. We are prone to exact the uttermost yield from a garden under forced conditions instead of so managing as to build up a self-perpetuating machine. We have at our hands this potent means of maintaining fertilizer value in the soil—cultivation and cover crops. The former practice pulverizes the mineral particles of the soil and exposes others to the chemical action of the air. The cover plants turn in vegetable matter, humus, and so we in our gardens do mechanically and in a short space of time what the elements do naturally in wearing down rocks and making soils over the centuries.

A Practical View

COVER CROPS, those plants used solely for the benefit of the soil and the crop to follow, are of such inestimable value in enriching the garden that they should be used to the limit of practicability. The great majority are fairly quick growing annuals, many of them hardy so far as winter is concerned. Their general strong points may be summed up as follows:

- (1) They prevent washing of the soil during autumn and spring rains. Both roots and tops aid in this matter.
- (2) They make the surface pleasant under foot during winter when work must be done upon the land.
- (3) They save soluble plant food that would otherwise be washed over the surface or down to lower levels out of reach of the succeeding roots.

For these three reasons, then, on land likely to be washed, the cover crop should have a large amount of top that will form a good obstruction to water and a good holder of snow. It should also have a large and fibrous root system so as to hold the soil grains; of the two probably the former is the more important.

Other Services Rendered

WHEN sown in late summer or early autumn quick growing cover crops tend to take considerable water and nitrogenous plant food from the soil and thus serve to check late growth of fruit trees and bushes and thus to *prevent the winter killing* of imperfectly ripened wood. The branches mature better

CAN'T BUY FERTILIZER? THEN GROW IT

where a cover crop is used. A tender crop such as buckwheat must be sown either much earlier than a hardy one, because it may be killed by an early autumn frost; or, it may be sown with a slow growing hardy crop (such as rye) which will take its place and function during the latter part of the autumn and the winter. Such a combination is often specially valuable where the trees are bearing large loads of fruit because the effect of the rye will rarely be pronounced before spring.

In both garden and fruit plantations cover crops add humus, or vegetable matter, to the soil and this material may contain relatively large quantities of mineral matter which they have secured from comparatively insoluble sources. They thus take the place of both stable manure and commercial fertilizers to a large extent. No matter whether the soil be heavy or light the supply of vegetable matter must be kept up. *Hence the cover crop that makes the largest amount of vegetable matter in a given time is generally the best to select.* To aid in getting such a growth manure or fertilizer or both may be added to the soil before the cover crop is sown.

What May Be Sown Now

MANY cover crops add nitrogen to the soil but some of these must be sown too early in the season to be of value in the garden. red, alsike, sweet, and white clovers are thus out of the question. But crimson clover may often be used following early potatoes and other crops which are harvested before midsummer or shortly after. It may also be sown among tomatoes, cucumbers, corn, cantaloupes and other crops that die with the first frost. The time to sow among these is after cultivation has stopped and the vines occupy the ground.

Why You Can Sow at Once

AS THE seed may not germinate for three or four weeks, and as the plants use very little moisture while small, they will do no damage to the vegetables, and the vegetable vines will not interfere with their development after the harvest. Hairy vetch sown alone or with rye is the other first class garden and orchard cover crop. It is more hardy than crimson clover and may be sown as late as early October on Long Island. This matter of *adding nitrogen is of special importance during these war times* when chemical manures are several times more costly than hitherto. In orchard and small fruit practice it is possible by continued annual use of legumes to make the soil too rich, but such cases are rare. The corrective is the use of nitrogen consuming cover crops such as buckwheat and rye.

Cover crops, especially the erect and stiff

stemmed ones catch and hold leaves and snow during fall and winter. The former add vegetable matter; the latter adds the small quantity of available nitrogen that water from the sky always contains.

Those crops that form a mat beneath trees may protect fruit from injuries which follow falling on the ground. This is especially noticeable with soft fruit like peaches, pears, plums, and early apples. Cover crops also protect the roots of trees and bushes during winter since they *check the alternate thawing and freezing of the soil.* An area protected will often continue frozen whereas one not covered may thaw deeply and settle, then freeze and heave seriously enough to injure the plants, especially if only recently planted.

Now For the Other Side!

SUCH being the main points in favor, what of the points against cover crops? The one often raised that they are killed by frost is of small importance; for the roots and the remains of the tops are still available. As a matter of fact practically everything is saved even in such cases; the only loss is water! some people raise the opposite objection; namely, that the plants do live over winter! Here is where danger is most likely to lie: the crop may be allowed to grow longer than it should in spring. The only safe general rule to follow is to dig or plow in spring as early as the ground can be worked, because every day's growth reduces the amount of soil water and hardens the plant stems.

Best for the Garden

FOR the garden the best cover crops to sow are: buckwheat, if sown before September first and in a section where the first fall frosts come as late as mid-October; cow-horn and ordinary turnips and rutabagas are hardy any time during September or early October where there are at least six weeks before winter sets in (some of the turnips may grow large enough for home use); Dwarf Essex rape, is good for the same reasons; rye, very hardy, almost sure to grow but is likely to get a serious start in spring—it *must be plowed under early*; crimson clover, a nitrogen collector, best of the clovers for garden work, often winter-kills in cold sections; winter or hairy vetch, hardy, excellent for collecting nitrogen and adding vegetable matter to the soil is best used with rye. Failing all other cover crops, don't despise those weeds which spring up during the fall. They are mostly annuals and may be easily killed by spring digging. In the meantime they will have held leaves and snow, prevented washing of the surface soil, checked the losses of plant food by seepage, added their vegetable matter to the soil, prevented injury to the tree and bush roots and in other ways played the full note of sown cover crops. If you haven't any weed seeds in your own garden be thankful to the neighbors for their unwitting donations.

PETERSON'S PERFECT PEONIES



This Picture, an untouched photographic reproduction of a corner of one of my Peony fields, shows to what wonderful perfection and profusion of bloom *Peterson Peonies* have been brought.

Twenty-four years of enthusiastic devotion have taught me how to grow this noble flower so that the roots I sell are possessed of unusual vigor and vitality—roots that show surprising results the first season after planting and prove an ever-increasing delight as the years come on.

Peterson Peonies more than "make good"

They are Peonies of performance—not merely those of clever advertising. Many thousands of people have learned this to their joy.

Why not you

My 1917 Peony Catalogue, beautifully illustrated with my own photographs, will gladly be sent you on request. (Note; Peonies should be planted in the Fall).

216 N. Calvert St., Baltimore, Md., Sept. 29, 1916

In a letter received from you sometime ago, you stated that the roots you would send me would be a revelation—they are in every sense of the word. These roots were planted for me by an old gardener who has known nothing but flowers for half a century, and he tells me they are the finest and most promising lot of roots that have ever come to his notice, and he knows his business.—W. G. Blandford.

80 Montclair Ave., Montclair, N. J., Sept. 26, 1916

My order of peonies reached me yesterday in splendid condition. I had a man from our local florist's set them to-day and he told me of the hundreds he had set he had set few orders which were as fine as yours, in fact, he said one of your roots would make two or three ordinary plants.

—(Mrs.) Edith T. Bridge

Beaver, Pa., June 28, 1917

I desire to thank you for the magnificent peonies which I bought of you last year, everyone of which grew, and has bloomed profusely. I have been buying and growing peonies for fifteen years and I never in all my experience saw such magnificent peonies the first year planted.—John B. McClure.

Hamburg, N. Y., August 10, 1916

The peony roots purchased of you were the finest roots I ever saw. This year they all bloomed and the beauty of them surpassed my expectation by far. People came to see them from near and far and went into raptures over them. It is by far the finest collection in Hamburg.

—Mrs. Geo. J. Brendel

GEORGE H. PETERSON, Inc. *Rose and Peony Specialist* **Box 50, Fair Lawn, N. J.**

Mohican Supremacy

WHY WE LEAD

BECAUSE of the study of, and devotion to, the Peony alone,—an undivided allegiance. It's significant.

BECAUSE our system of cultivation is unmatched in this country. Every root given individual and intensive culture,—as in a private garden. Ask those who have been here.

BECAUSE we do not send out a root until—regardless of its age—it has bloomed satisfactorily here the spring prior to its going to you. Some of the plants we deliver are three and four years old—with no advance in price.

BECAUSE there are not 2000,—nor 1000,—nor 500 distinct varieties; but scarcely more than 100; and we have "spiked the guns" of the duplicates at high prices.

There are lots of POOR Peonies; why not have the benefit of really expert advice? Our fame is nation-wide; everywhere the supremacy of our Peonies is established. It is because we are specialists in a sense which possesses a REAL value and significance; that is,

WE GROW PEONIES —NOTHING ELSE

"OUR REPUTATION HAS BEEN BUILT ON THE QUALITY OF OUR STOCK"

and they cost no more from us

DISTINCTIVE CATALOGUE NOW READY

Mohican Peony Gardens, ^{BOX}300 Sinking Spring, Penn'a

Stump & Walter Co's Timely Topics

The keynote of September garden activity, is "Preparation!" If you would enjoy inexpensive flowers all winter, *now* is the time to prepare. To be able to gather flowers outdoors soon after snow disappears, prepare *now*. You may enjoy green, velvety lawns next spring while your neighbor is just planning his, by *timely action this month*. And, last but not least, you can have a better garden that will yield bigger crops of choicer vegetables in 1918, if you lay the foundation for greater soil fertility this fall. The following offers will help you materialize all of above possibilities.

More Flowers For a | Bulbs—All Kinds

Brighter Christmas

A small sum invested in bulbs this month will help make Christmas a doubly cheerful occasion. Plant the following in pots or pans (which we also offer):

Roman Hyacinths, the earliest of all to bloom and easiest to grow. White. \$1.25 per doz., \$8. per 100.

Narcissus, Giant Paper-White, fine for growing in water, with pebbles to support bulbs. Large Bulbs, 5c each; 50c per doz.; \$2.75 per 100.

Jumbo Bulbs, 10c each; 75c per dozen; \$3.50 per 100.

Enjoy These Extra Early Spring Flowers

The brilliant little Crocuses help much to make the lawns a great source of satisfaction very early in the spring. Who does not love the modest little Snowdrops and the more showy Daffodils? Here are the kinds that will help brighten the early spring days:—

Select, Named Crocuses in blue, white, golden, purple, yellow and striped. 20c per doz.; \$1.25 per 100, postpaid.

Snowdrops, select bulbs, single, 30c per doz.; \$1.50 per 100; double, 35c per doz.; \$2 per 100.

Daffodils, six select sorts, extra fine bulbs. Six bulbs each, six varieties, 36 bulbs in all, \$1.50 postpaid.

A Garden Full of Tulips for One Dollar Postpaid

Giant Darwin Tulips that bloom in May are one of our leading specialties. So well is the quality of the bulbs we sell recognized by the most critical that our sales of them ran into hundreds of thousands of bulbs.

Fine Darwin Tulips, in a mixture including choicest varieties, such as Clara Butt, Europe, Pride of Haarlem, etc., giving 75 bulbs in all, prepaid \$1.00. (West of the Mississippi \$1.25.)



in any quantity, of the most critically selected quality *only*, are available at prices within the reach of all. Tulips are our specialty! We handle, perhaps, a greater assortment of choice kinds than any one in the trade. Besides Tulips, we handle immense quantities of Hyacinths, Daffodils and scores of other bulbous roots. Our bulb department constitutes a very important part of our establishment, the high standard of which we maintain at all costs.

Beautiful Spanish Irises

Select mother bulbs for planting out this fall that will bear those glorious flowers commonly called the "poor man's orchids." We offer a splendid selection of sorts in the following collection:—10 bulbs each of 10 varieties, 100 bulbs in all, for \$1.25.

Inexpensive Fertilizer

As soon as part of the garden has borne the crop, dig up the ground and sow either Winter Vetch, Rye or Rape. Turned under in the spring the plants will enrich the soil. Our stock of these useful forage and "green" manure plants is excellent. Since market prices change frequently, write for latest quotations.



"Staigreen" Lawn Grass

is a scientifically compounded mixture of the choicest grasses especially adapted to eastern soils and sections. Sown this fall, it will make a strong, quick growth this fall, and become firmly established to provide a

beautiful lawn next spring. *Staigreen Lawn Grass Seed*, delivered anywhere in the U. S. at the following prices:—Pound, 40c; 5 lbs., \$1.75; 25 lbs., \$8; 100 lbs., \$30.

Write for Free Fall Catalogue

It will help you formulate fall plans for both your indoor and outdoor gardens. Really a complete guide to fall planting of bulbs, plants, seeds of such kinds as our lifelong experience in the business enables us to recommend to you as thoroughly dependable. Offers all you need for your gardening activity at reasonable prices. Please ask for it TO-DAY.

Stump & Walter Co

30-32 Barclay Street
New York

Forcing Bulbs in a Greenhouse

YOU CAN have flowers in the greenhouse during the winter without seriously affecting the use of the greenhouse for general purposes, as the bulbs when they are first brought indoors, are placed *under* the benches to develop a stem growth and they occupy bench space for only a few days as they are simply brought up to the light to give color to the foliage and finish to the flowers. The bulbs are usually planted in boxes, pans or pots according to the purpose for which they are to be used (see pages 43 to 46). Lilies, Callas, Ranunculus, Oxalis, Anemone, and Cyclamen are usually planted in pots and placed in the frame, covering them with one or two inches of ashes to insure even soil conditions. When the growth shows through above the covering, they can be removed to the greenhouse or retarded until wanted by maintaining a low temperature in the frames.

Freesia, Oxalis, Chionodoxa, Spanish Iris, and Gladiolus are also handled in this manner but they are usually grown in boxes as they are used more extensively for cutting.

The hardy bulbs such as Tulips, Hyacinths and the various Daffodils and Narcissus, Allium, Ornithogalum, and Crocus are to be planted in boxes or pans and buried in trenches out of doors or the boxes can be laid flat and several inches of clear sharp sand over them will prevent them from freezing. The freezing will do no damage but makes it very troublesome to get the bulbs without breakage. I prefer the burying method. They are, of course, more trouble when handled in this manner, but the even temperature of the ground at a depth of two feet is very conducive to root growth; and that we must have for high grade flowers. The bulbs are dug up as required, of course using the early bulbs first, such as Paper White Narcissus then the French grown single Narcissus, Crocus, and the single early Tulips in the order named.

Forcing can be started in November and continue throughout the entire winter.

Forced Bulbs After Flowering

AFTER they have been forced all the hardy bulbs may be used for outdoor planting. You won't get any returns for the first year, and they should not be used in conspicuous places as there is always some uncertainty about them; but those bulbs that increase such as the Narcissus, will in the course of a few years make some very respectable clumps.

Bulbs, generally speaking, are cool growing plants. There are but few that delight in high or even moderate temperatures. If grown in too warm a place, you get inferior flowers and weak stems. They are also much more likely to be attacked by insects and diseases when growing in uncongenial conditions. The flowers when cut, do not keep for so long a time when forced rapidly and it also tends to develop any weakness in the bulb and you will get a large percentage of blind buds; that is to say, buds that "blast" and do not mature. The maximum growing temperature should not exceed 55 degrees at night and 50 degrees would be better on an average. Exceptions are: the Lilies of all kinds, which may be grown at 60 degrees or even 65 degrees; Lily-of-the-valley can be grown at 70 degrees without harm; Amaryllis will stand from 60 to 65 degrees. Freesia and Cyclamen should be grown at 55 to 60 degrees.

Gladioli

IF YOU could see the Gladioli in full bloom at Cedar Acres (75 acres of glory) you would just have to have Gladioli in your garden.

You can see the blossoms, if not the fields, and you can choose your varieties from the actual blossoms.

I will deliver to you in perfect condition a large box of Gladioli spurs in full bloom, adequate for selecting bulbs to plant next Spring for **One Dollar**. A greater variety for **Two Dollars and a Half**. Each variety labeled and priced for immediate order, and early Spring delivery. My fascinating booklet on Gladioli accompanies each box.

Buy now after you have seen the actual blossoms. Present prices are low. Stocks of Gladioli will be limited next Spring and prices high.

Cedar Acres

B. Hammond Tracy (Box 27)

WENHAM, MASS.



Brand Peonies

are the Choicest Productions of
America's Foremost Peony Specialists

The lover of good peonies is constantly on the look-out for something new and choice.

The seventeen years which we have spent in originating new peonies, place us now in a position to supply just this demand.

By the most careful and painstaking methods, we are constantly working to bring forth year after year new sorts of peonies.

We find that ten years from the planting of the seed is the least possible time in which the worth of a peony can be determined.

A variety to be retained by us must be healthy in root, stem and foliage. It must be not only beautiful but profuse in bloom and this bloom must come true year after year.

The careful and methodical testing of varieties along these lines permits us now to offer the public a line of peonies which are entirely to be depended upon. They are beautiful in bloom and entirely new.

A Few of Brand's Superb Originations Three of the "Greatest in the World"

Martha Bulloch—Pink. This famous beauty, as pictured above, was the subject of considerable attention at the exhibition of the Peony Society in Philadelphia, June 13-14th reported in Garden Magazine for July. Along with other first-class sorts, it was found worthy of praise because of its "superlative" qualities.
Elizabeth B. Browning—White. **Frances Willard**—White.

Our Finest Reds

Richard Carvel, Longfellow, Lora Dexheimer, Mary Brand.

MIDNIGHT—The Black Peony, a single four year root of which sold this season for one hundred dollars. (\$100.)

Others

Archie Brand, Louisa Brand, Chestine Gowdy, Florence Nightingale, Harriet Farnsley, William Penn—The monstrous, sweet scented deep pink.

And many other new ones, just coming out.

Descriptive Literature on request. Write to-day while stocks are complete

BRAND PEONY COMPANY
540 Lumber Exchange, Desk B, Minneapolis, Minn.

A Bulb Catalog of Value

Do You Want to Know all About

May Flowering Tulips—Darwins, Breeders, and others—their origin and history?

Are you particularly interested in the various Types of Iris?

Have you ever had difficulty in distinguishing the Daffodils from the Narcissus?

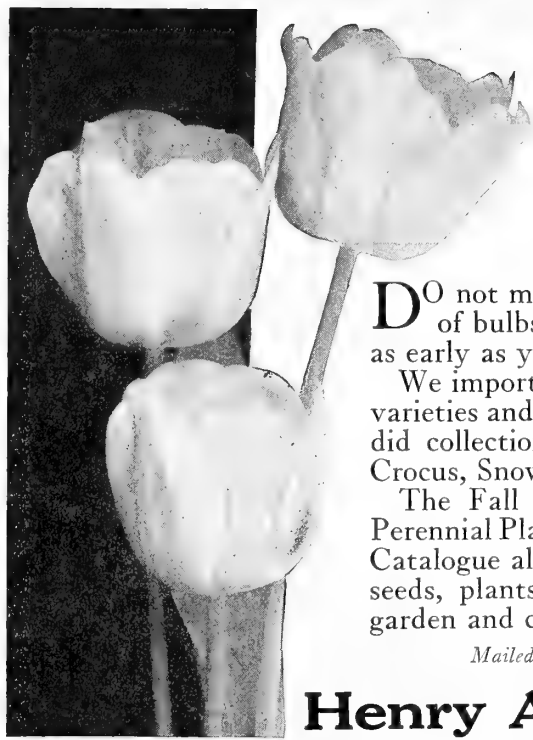
Can you tell the difference between a "Bomb-shaped" and "Rose" Peony?

Our Catalog is the most valuable book of its kind published. It contains all the above and much other information of value to you. It is a book you will want to keep for reference.

Write for it to-day. Ask for Bulb Catalog

WOOD, STUBBS & CO., Louisville, Ky.

INCORPORATED



Dreer's Reliable Spring-Blooming Bulbs

DO not miss the joy of having a bed or border of bulbs next Spring. Plant them this Fall as early as you can and success is certain.

We import the very highest grades of the finest varieties and offer in our Autumn Catalogue splendid collections of Hyacinths, Tulips, Narcissus, Crocus, Snowdrops, etc., etc.

The Fall is also the time to set out Hardy Perennial Plants, Vines, Shrubs, etc. Our Autumn Catalogue also gives a complete list of seasonable seeds, plants and bulbs for out-doors, window garden and conservatory.

Mailed free to any one mentioning this Magazine

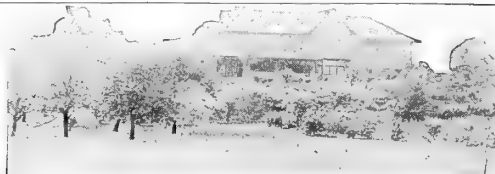
Henry A. Dreer, 714-16 Chestnut St. Philadelphia, Pa.

Horsford's Cold Weather Plants

are the best to use where winters are severe. Don't forget that plants which have stood Vermont winters can stand any cold climate where white folks are willing to live. I grow and sell Trees, Shrubs, Hardy Flowers of best sorts, Wild Flowers, Orchids for outside culture, Hardy Ferns, Lilies (mostly fresh from the beds), Crocuses, Tulips, Narcissus, Trilliums, etc.

Before placing your orders drop me a card and get my spring and fall catalogue. Don't fail to see it before ordering. Ask for Catalogue N.

F. H. HORSFORD, Charlotte, Vt.



Many of the Most Famous Lawns

have been produced by the Lenox Formula—a high quality re-cleaned seed mixture of fine-leaved, dwarf-growing grasses. We recommend sowing from August 15th to September 15th, five bushels to the acre, or for renovating old lawns, one to two bushels. Per bushel of 20 lbs, \$5.50; per single lb., 35c. We shall be glad to make up special mixtures if desired and invite consultation regarding any difficulties you may experience in getting the right turf for any purpose or place.

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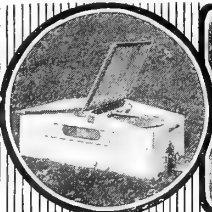
Send twenty-five cents for catalogue. This amount will be refunded on your first order.

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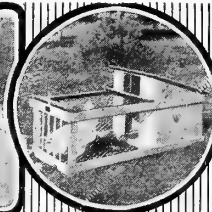
E. A. REEVES South Euclid, Ohio



Brooder for 50 to 100 chicks



No. 3 Poultry House for 60 hens—2 units



Setting Coop

HODGSON PORTABLE HOUSES

The various models of these houses are arranged after the most scientific methods of raising poultry. Years of experience have proved this. The brooder can be operated outdoors in zero weather. The poultry house is made in sections that can be quickly bolted together by any one. The setting coop keeps a hen by herself while setting. All neatly painted. Send for illustrated booklet.

E. F. HODGSON COMPANY Room 311, 116 Washington Street, Boston, Massachusetts
6 East 39th Street, New York City

Old-Time Southern Recipes

J. M. PATTERSON

CONTINUING the recommendation made in last month's GARDEN MAGAZINE (p. 26) here are some convenient ways of handling corn, beans, etc:

Butter beans, black eyed peas, navy beans and English garden peas can be left on the vine to dry. After gathering, spread out on paper in the attic to dry out thoroughly, then shell and put in thick paper bags. As a precaution against weevil pour a little bisulphide of carbon on the seed and close up the bag. One ounce to one hundred pounds of seed is the correct proportion. Bisulphide of carbon does not impair the beans for food or seed, but running them in the oven as is sometimes recommended impairs the beans for seed. Caution—Bisulphide of carbon is inflammable and should not be used near a light or fire.

Snap Beans can be put in a strong brine and are quite as good as those that are canned—

Snap Beans in Brine. Gather when tender and not too large, string and break in half—scald in boiling water, and then plunge in cold water immediately. Make a brine strong enough to bear an egg—put snap beans in an earthen jar and fill up with brine—let the beans be well under the brine—turn over them a heavy plate to weight them down—cover over with grape leaves and tie over top of jar a heavy piece of cotton cloth. A few beans could be added daily if there are not enough beans at one time to fill jar, but it is well to add a handful of salt each time so the brine will be quite strong. To use, take out as many beans as needed and soak over night, cook and serve.

Corn packed in salt. Gather the corn when in good condition to eat and prepare the same day—boil on the cob until the milk ceases to flow, which is about ten minutes—cut the corn off the cob being careful not to scrape the cob and get any of the husk—and pack in stone jars in the following order:

A layer of salt at the bottom half inch deep, then one of corn two inches deep, another half inch salt, and so on until the jar is nearly filled. Let the top layer of salt be double the depth of the others and pour over all melted lard (not hot) or paraffine. Press upon this when nearly hard a thick white paper, cut to fit the mouth of the jar. Keep in a cool place. To use, take out of jar as many cupfuls as are needed, pressing the covering of salt and lard carefully back into place. Soak corn over night before using.

Corn Put up in Brine. As late as possible in the fall prepare tender roasting ears for winter use. Strip off the outer shuck, leaving the inner, silky ones next to the grain. Have ready a nice clean wooden firkin or tub, properly scalded and sunned. Sprinkle salt over the bottom. Pack closely with corn. Wash a large flat rock and lay on the top when nearly full. Pour strong brine over the corn, covering it well. The day before using, strip off the shuck and silk, place in a bucket of cold water (renewing the water once or twice) and let it stand until ready to use.

Two ears soaked thus and shaved into a pot of soup with other vegetables will impart a delicious flavor. Boil on the ear ten minutes and serve whole for dinner.

Dried Corn. Boil corn on cob about twenty minutes. In cutting it off be careful not to cut too close to cob. Spread on a cotton cloth and put in sun each day until perfectly dry, taking it in at night. When dry put in a cotton bag and hang in a dry place. To use, take a tea cup full and soak in water all night before using, and before serving boil it for five minutes. It is not good for corn pudding.

QUINCE HONEY

This Quince Honey can easily be put in wide mouthed bottles as can the cold Cucumber Catsup.

Choose for this honey nice ripe quinces, pare, core and grate. To a pint of the grated fruit allow three pounds of sugar and a pint of water. Boil the sugar and water until it spins a thread, add the grated quince and boil as thick as honey. Pour into jars and seal hot. This is nice to serve with hot breads and cakes in the winter.

OLD-FASHIONED HOMINY

Making hominy by the old method is so much better than the new way but it requires much patience.

Two heaping tablespoonfuls of cooking soda can be used in place of the home made lye to bring this old time receipt down to modern times.

To Make Hominy. 1 qt. of dry white field corn. ¼ teacup of home made lye.

Wash the grains of corn thoroughly. Mix with the lye. Put in a large kettle on the stove and cover well with water to be under water two inches. Let boil until corn cracks. Take off of stove and set aside to cool. Rub corn between the palms of the hands to free the grains of the husks. Rinse in fresh water. Cover thoroughly with water and put back on stove and let come to a boil. This rids it of the lye and leaves hominy white. Pour this water off and put on again with twice as much water and cook slowly until done.

Glorious Puget-Sound Peonies

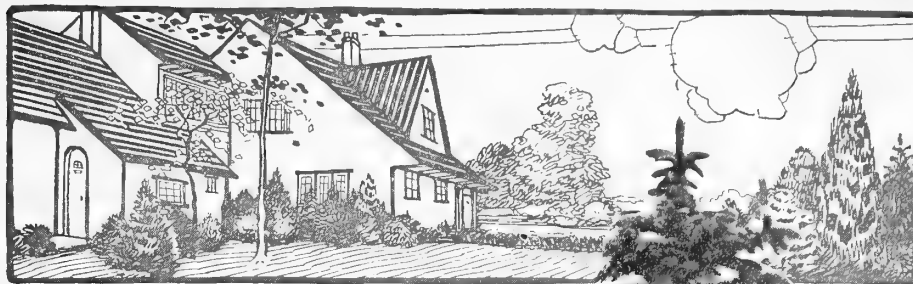
The finest named varieties now ready for your selection and Fall planting. Send for descriptive price list.

Roses, Bulbs, Perennial Plants
for Fall Planting

Home grown, Handgathered 1917 Dependable Perennial Flower Seeds that won't disappoint you.

THE PUDOR FARMS

Puyallup Washington
Plant, Bulb and Seed Specialists



The Economy of Planting Evergreens This Fall

OF FIRST importance — planting conditions are in both your and their favor.

When Fall planted, they become firmly established and next Spring put forth a vigorous growth; which means quick, sure returns for your expenditure.

Then there is the help problem, which is now in your favor. As short as it has been, it will be shorter yet in the Spring; shorter and cost more.

With the usual Fall slacking off of estate work, you will find more men available. The thought of frost and Winter, also makes them less independent.

As for the quality of our trees, we will leave that to you or any expert you may choose to pass on them.

We know them to be a choice lot, with full vigorous tops and abundant compact roots.

In variety, few nurseries have as large an assortment, even to the rarer kinds. Send for our catalogue.



Every worth while nursery burlaps their evergreen root balls nowadays. Burlapping is recognized as essential to best results. But don't lose sight of the fact that it's roots you want. Plenty of compact fibrous roots with ample clinging undisturbed soil about them.

These are what we burlap.

Julius Roehrs Co
At The Sign of The Tree
Box 10, Rutherford N.J.



LUTTON GREENHOUSES

Give 100% Satisfaction

Attractive Efficient Durable

Particulars upon request



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263-269 Kearney Ave.
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Horticultural Architects and Builders

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School of Horticulture for Women

AMBLER, PA.

Two years' practical and theoretical course in Horticulture. Next entering class for diploma students January 15, 1918. Fall course of ten weeks for amateurs begins September 11th. Write for particulars. Early registration advised.

Elizabeth Leighton Lee, Director, Box 105

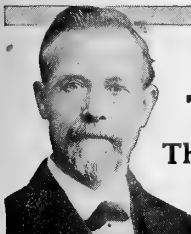
PEONIES

Fifteen fine named Peonies for \$2.50, or 25 for \$5.00, all different and truly labeled, a chance to obtain a fine collection at half price, comprising such varieties as Festiva Maxima, Delachei, Achillea, Lady L. Bramwell, Couronne d'Or, Prolifica Tricolor, Louis Van Houtte, and various other fine sorts. With any order of above for \$5.00 I will include one plant of Baroness Schroeder, free. I have the largest stock in America of Lady Alexandra Duff (absolutely true) and many other fine varieties. Send for catalogue.

W. L. GUMM, Peony Specialist
Remington, Indiana

For Safe Tree Surgery

The Davey Tree Expert Co.
1204 Elm St., Kent, O.



Davey Tree Surgeons

A Real Peony Garden \$2.50 A Real Peony Bargain

12 plants, 6 good kinds,	\$2.50
25 plants, 12 good kinds,	4.50
25 plants, 12 choice kinds,	7.50

Free blooming named varieties, our selection, mailing size, good value, and sent prepaid. Many should bloom the first year.

Descriptive list quoting prices for express shipment sent on request.

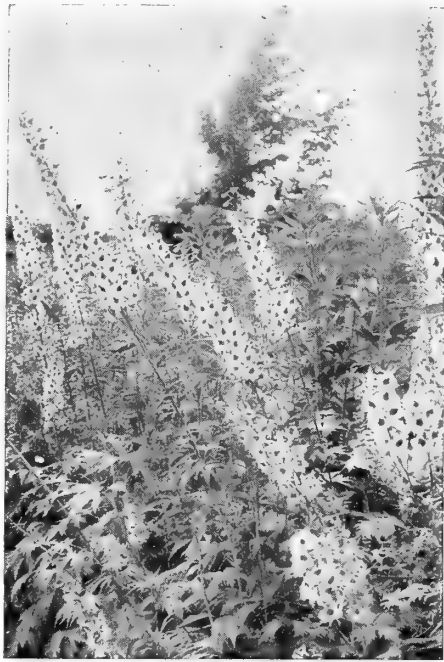
The Sarcoxie Nurseries Peony Fields
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The Fear of Color

Send \$1.00 for our Booklet "Fear of Color. Fear of plants. Fear of Plants as Weeds." This Booklet will mark the beginning of a revolution in cultivation of soil, especially gardening in town and country. Onions and Carrots 1500 to 2000 bushels per acre. No hand weeding. No hand thinning. The greatest single annual economic leak is the ignorant, careless and slovenly cultivation of soil and spacing of crops. Nature conserves, upbuilds and enriches soil by growing plants upon it. Upbuild your soil in field and garden by efficiently growing and spacing crops. Let us tell you how. Upbuild, conserve and guard your health by growing and eating northern grown vegetables, highly colored northern grown fruits, which properly feed stomach, intestines and colon. Efficient field and garden hand tools, illustrated and uses explained, alone are worth the price of the Booklet. Money returned as cheerfully as taken if not satisfied. We do not want your money unless we fairly earn it.

A. H. & N. M. LAKE, Box 107, Marshfield, Wis.



Top-Notchers Perennial Larkspurs

If you like blue flowers, you simply must have some of our wonderful seedling Larkspurs with their regal spikes six feet or more in height in marvelous shades of dark-blue, light-blue and white.

Special Offer

For Immediate Planting

To introduce our new Seedling Larkspurs, we will send prepaid to any address:

12 Assorted, One-Year Old
Field-Grown Clumps, \$5

Guaranteed to bloom continuously year after year.

SEND FOR OUR CATALOGUE
"PERENNIALS FOR
FALL PLANTING"

Charles H. Totty
Madison New Jersey

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in September

(Following dates are meetings unless otherwise specified)

- 1-2. Massachusetts Horticultural Society, Boston, Mass. Exhibition of the Products of Children's Gardens.
3. Lenox, Mass., Garden Club.
4. New Bedford, Mass., Horticultural Society.
4. Lake Geneva, Wis., Gardeners' and Foremen's Association.
6. Garden Club of Pleasantville, N. Y.
6. Marshfield, Mass., Garden Club.
6. Garden Club of Lawrence, L. I. Lecture: Garden Design and Color.
- 6-7. Northern Nut Growers' Association, Annual Convention, Stamford, Conn.
7. Pasadena, Cal., Horticultural Society.
8. Dobbs Ferry, N. Y., Horticultural Society.
- 8-9. Massachusetts Horticultural Society, Boston, Mass. Dahlia and Fruit Exhibition.
10. Park Garden Club, Flushing, L. I.
10. Rochester, N. Y., Florist Association.
10. New Rochelle, N. Y., Garden Club.
10. New York Florists' Club, New York City, N. Y.
10. Short Hills, N. J., Garden Club.
12. Lenox, Mass., Horticultural Society.
14. Nassau Co. Horticultural Society, Glen Cove, L. I.
14. Connecticut Horticultural Society, Wethersfield, Westchester, N. Y., & Fairfield, Conn., Horticultural Society.
14. Minnesota, Minn., Garden Flower Society.
17. Lenox, Mass., Garden Club.
19. Rhode Island Horticultural Society, Providence.
19. Tarrytown, N. Y., Horticultural Society.
20. Marshfield, Mass., Garden Club.
- 20-22. American Peat Society, Minneapolis, Minn.
21. Pasadena, Cal., Horticultural Society.
- 21-22. California Dahlia Society, San Francisco, Cal. Annual Exhibition.
22. Dobbs Ferry, N. Y., Horticultural Society.
24. Park Garden Club, Flushing, L. I.
- 25-27. American Dahlia Society in conjunction with the American Institute of the City of New York.
- 26-28. Short Hills, N. J., Garden Club.
- 26-28. School Garden Association of New York, New York City. School Gardens Exhibit of the Schools of New York.
28. Connecticut Horticultural Society, Wethersfield, Garden Club of Lawrence, L. I. Flower and Vegetable Show.

The Late M. Vilmorin

Philippe de Vilmorin, head of the world-famous wholesale seed house of Vilmorin-Andrieux & Co., of France, died June 30th. He was forty-five years of age and had succeeded his father in the able direction of the firm which has long been an institution of the greatest value to horticulture and agriculture, dating from 1774. It is in the production of the sugar beet (by Louis Vilmorin 1816-1860) that the most spectacular result rests, but each generation has labored consistently for continued improvements in vegetables and flowers, until the very name of Vilmorin raises ideals of progress and standards of accomplishment that are quite unusual. Philippe de Vilmorin had many friends in America, and the writer of this note records the loss of an esteemed friend who was at all times ready to assist from the stores of his knowledge and experience.—L. B.

The Dahlia Festivals

FOLLOWING a season that has generally proven quite favorable for the production of flowers the managers of the American Dahlia Society are assured of an unusually representative display of blooms on the occasion of the annual exhibition to be held in conjunction with the American Institute at 25 West 39th St., New York City, September 25th to 27th. Admission is free, and the leading growers will have their novelties on view. On October 3rd the Short Hills, N. J., Garden Club holds its ninth annual Dahlia show, this time for the benefit of the American Red Cross. It is hoped that interested amateurs having blooms to send will communicate with the Secretary, Mrs. Chas. H. Stout.



Lil. Candidum (Madonna Lily)

No Lily so glorious, so chaste, so fragrant, and **HARDY** planted in September—flowers June-July.

	Each	12	100
Extra large bulbs	\$.20	\$ 2.25	\$ 12.50
Monster bulbs.	30	3.00	15.00

Delivery paid

Send for our Fall Bulb Book. **UNIQUE—INSTRUCTIVE.**

H. H. BERGER & CO., 70 Warren St., N. Y.

PROFIT and PLEASURE
in growing your own
Fruit next year

Atkinson's PREPARED Humus

contains everything necessary for any plant and any soil
Each Pound (with proper cultivation) will grow more than
five lbs. of luscious vegetables

INSURE THE LUXURIOUS GROWTH OF YOUR TREES AND SMALL FRUITS by fertilizing them this Fall with Atkinson's Prepared Humus. Cream of the Earth top dressing, will produce a fine putting green or lawn quicker and cheaper than by any other method. The original, clean, odorless Prepared Humus. Beware of imitations and substitutes. Apply now on lawns. Humus is universally recognized as being an indispensable element necessary to plant growth, but it is not a complete fertilizer by itself. The elements lacking are supplied in Atkinson's Prepared Humus. "Humus is the basic matter for plant foods. Bread without salt would be a failure; plant food without Humus is a JOKE." Scientific Crop Feeding, Vol. 5, No. 5. Please send your dealer's name with your order. Prices F. O. B. cars at warehouse—Bogota, N. J. 100 lbs. \$3.00; 300 lbs. trial order \$7.50 the ton rate. Price per ton \$50.00, with instructions if desired.

M. B. ATKINSON

Bogota, New Jersey

SUN DIALS

Pedestals, Gazing Globes

Dials to order for any latitude. Guaranteed to record sun time to the minute.

Illustrated detailed information sent upon request
Ask for Folder C-2

E. B. Meyrowitz, Inc., 520 Fifth Avenue
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Branches: Brooklyn, Detroit, St. Paul, Minneapolis, London, Paris.

**THE BARTLETT WAY
OF TREE SURGERY**

Means safe, sure and lasting results. It is backed by years of "knowing how." Enthusiastically endorsed by Forestry Schools. Representatives available everywhere. Send for "Tree Talk."

THE F. A. BARTLETT COMPANY
538 Main Street Stamford, Conn.

**DUTCH BULBS
are coming!**

The Quality of "Diamond Brand" Bulbs of 1917 crop promises to be superlative. We are not so sure about the Quantity, but hope enough will reach us to go around.

Special Offer:—To popularize the giant-flowering **DARWIN TULIPS** we will mail 12 blooming bulbs each of **CLARA BUTT**, clear salmon pink, **PRIDE OF HAARLEM**, deep rose shaded scarlet and **GRETCHEN**, very light salmon, 36 fine bulbs in all, postpaid for..... **\$1**

FREE:—Treasures of Bulbland
describes the choicest Hyacinths, Tulips, Daffodils, etc. Delivery in September. Write for your copy TO-DAY.

NETHERLAND BULB CO., 32 Broadway, N. Y.

Enlist the Berry Plants to Boost Next Season's Food Crops

A few square yards of ground, a few spare hours of work in planting and cultivating and you may gather, *next spring*, all the berries you want, *from plants set out this fall!* A small investment in plants will give you an assortment of vegetables, fruits and berries in bearing from April to November. Besides fresh stuff to eat, there'll be a surplus to can. • As a "high cost of living" reducer, few plant collections equal our

Home Garden Collection of Food Plants

Carefully selected by our garden expert to provide *A Family of Four* with an abundance of good things to eat. Appetizing Asparagus, delicious Rhubarb and then quantities of berries, bearing in perfect succession fruit of a quality rarely obtainable on market. Here is the collection we recommend:

- | | |
|---|-------------------------------|
| 100 Strawberries, Superb
Everbearing | 24 Currants, Perfection |
| 24 Raspberries, Red
Everbearing Ranere | 12 Gooseberries, Downing |
| 12 Raspberries, Yellow
Golden Queen | 100 Asparagus Roots, Palmetto |
| 12 Raspberries, Black Cumberland | 6 Rhubarb Roots, Champagne |
| 12 Blackberries, Blowers | 12 Grape vines, as follows: |
| | 2 Niagara 2 Lucille |
| | 2 Diamond 2 Green Mountain |
| | 2 Wyoming 2 Moore's Early |

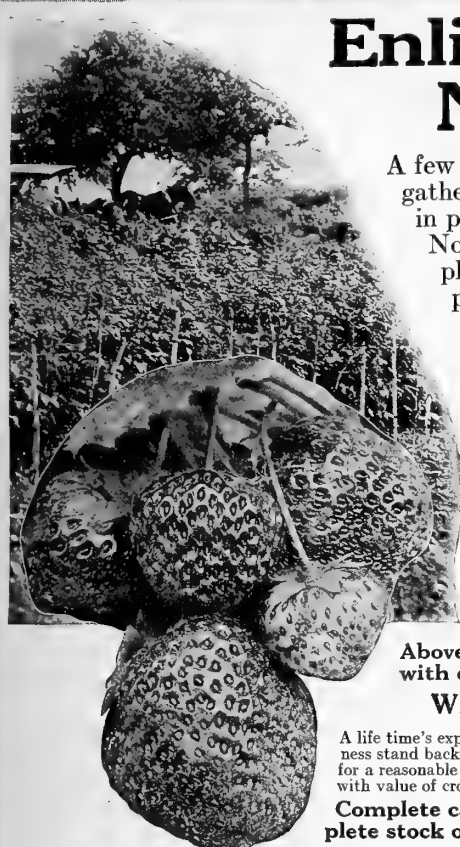
Above collection of 320 Strong, Healthy Plants, together with directions how to plant and cultivate for \$12.

Will bear from April to November in 1918

A life time's experience of varieties; over half a century's experience in the nursery business stand back of every plant in the collection. Definite results are assured in return for a reasonable amount of care, while the cost of the plants is negligible when compared with value of crops gathered. Join the great army of food producers NOW!

Complete catalogue of berry plants, fruits and a most complete stock of ornamentals free. Write or order TO-DAY.

Every Can of Fruit Saved
Helps the
World
to Victory



GLEN BROS., Inc. Glenwood Nursery Established 1866 1819 Main St., Rochester, N. Y.

More About Brand Peonies

Within a few years we expect these magnificent American seedlings to outclass, in popular favor, most novelties of the old world. Their rugged constitution and great adaptability to many soils and climates make them the Peonies "par excellence" for American gardens. We grow acres of them and every root is

Guaranteed True-to-Name

Our careful system of handling the plants in the fields assures you that you will receive just the kinds you order. By systematic testing we eliminate all weak or unreliable kinds. This we have done for years with the result that now, our assortment contains only the top-notchers in every class. Francis Willard, shown herewith, is one of our choicest and best. Become acquainted with all the rest of our collection. Write us TO-DAY for

Catalogue Describing 400 Varieties, Yours Free for the Asking

Francis Willard—a Winner

Besides Brand's glorious new seedlings we have a most complete stock of the newer French and English varieties. None but the choicest are given space in our nursery. Become acquainted by writing us to-day. Conscientious service, fair prices, and a square deal are assured you.

Babcock Peony Gardens, R. F. D. No. 80, Jamestown, N. Y.

For Autumn Planting



Bobbink & Atkins

400 ACRES OF NURSERY 500,000 FEET UNDER GLASS

In quality, variety and extent our collections are unrivalled in America

**Evergreens and Rhododendrons
Peonies and Iris
Hardy Old-Fashion Flowers
Spring Flowering Bulbs**

Special Catalogue for Fall Planting on Request

Visit nurseries only 8 miles from New York

Rutherford, New Jersey

KING GREENHOUSES

are winter gardens. They are built to capture every bit of sunlight during the short days and give in zero weather, practically the same growing conditions which your plants enjoy in summer.

Now is the time to build your winter garden. Just write for our greenhouse literature and tell us what you would like. Our experts, without any obligation, will put your ideas into practical shape and submit plans and estimates.

King Construction Company

377 King's Road, North Tonawanda, N. Y.

All the Sunlight All Day Houses

BRANCH OFFICES:

New York, 1476 Broadway; Boston, 113 State Street; Scranton, 307 Irving Ave.; Philadelphia, Harrison Bldg., 15th and Market Streets



Wolcott's for Hardy Plants

Transform your shady spots into harmonious color pictures by colony planting of hardy primulas! Our stock of rare and beautiful kinds is unique in this country, both in number of varieties and quantity as well as quality of plants. Plant them this fall for spring bloom in your garden.

A modest booklet describing all our plant treasures is yours free to command. Write for it.

WOLCOTT NURSERIES Jackson, Mich.

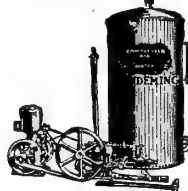
Fairfax Roses

Do you want an abundance of roses all summer? Then plant Fairfax Roses. They are grown slowly under natural conditions (not forced) will bloom the first season for you under ordinary care, and will be a constant delight for many years.

Book on request giving instructions as to the proper method of growing roses.

W. R. GRAY

Box 6 Oakton, Virginia



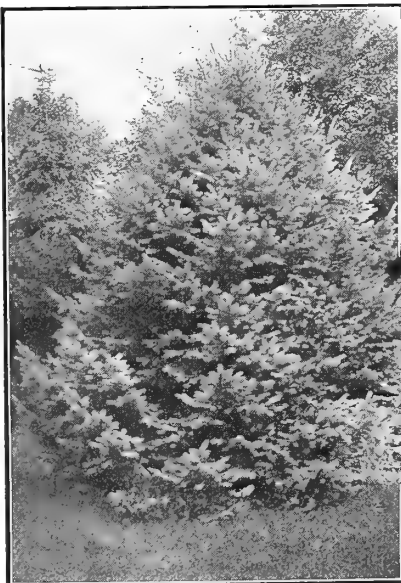
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Water Supply
for
Country Homes**

32-page Bulletin of water-supply facts and installation suggestions gladly mailed free: describes Deming air pressure systems—convenient, dependable, simple—operated by motor, hand pump, gasoline engine or windmill. Write to-day to

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119 Depot St. Salem, Ohio

Putting Color in the Landscape

Evergreens provide the solid colors that lend permanency to the otherwise constantly changing aspect of the landscape. Add unusually beautiful tints to the permanent pictures created with Evergreens and the near-ideal in landscape building may be attained. Of all the Evergreens with effective colors, we best like



Blue Spruces for Beauty and Symmetry

Colorado Blue Spruce (*Picea pungens glauca*) varies in shade from light green to intense steel blue. Of uniform shape and habit, reaching a height of 25 feet, when fully developed. Carefully selected blue seedlings, 2 ft. high, each \$1.50; 3 ft. high, each \$2.50. **Koster's Blue Spruce** is a particularly fine strain of intense blue, permanently retained by grafting. It is uniformly more reliable in holding the color, and the needles are longer. Height 20 feet when full grown. 2 ft. high, each \$2.50. 3 ft. high, each \$4.50.

Ready for transplanting now. Plants will be carefully packed and safe arrival is guaranteed.

Free: Treatise and Catalogue

The treatise contains practical suggestions how to choose and plant Evergreens. Our complete catalogue is ready to acquaint you with the vast resources of our extensive nurseries, backed by over a century's experience in the business. Write us TO-DAY.

AMERICAN NURSERY COMPANY, Inc.

800 Acres—at Flushing, L. I. and Springfield, N. J.

Sales Office—Singer Building, N. Y.

A Garden Library for a Dollar and a Quarter

Bound volumes of THE GARDEN MAGAZINE represent the last word on gardening. It is really a loose leaf cyclopedia of horticulture. You are kept up to date. Save your copies of THE GARDEN MAGAZINE and let us bind them for you. There is a new volume every six months, and Vol. 24 is ready now. Send your magazines by Parcel Post and we will supply index, and bind them for you for \$1.25. If you have not kept all of the numbers, we will supply the missing copies at 25c each, or we will supply the bound volume complete for \$2.00. THE GARDEN MAGAZINE can be of more service this year than ever before, and you can get most out of the magazine when you bind it, and keep it in permanent form. Address:

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GARDEN MAGAZINE, Garden City, N. Y.

Plant Evergreens NOW



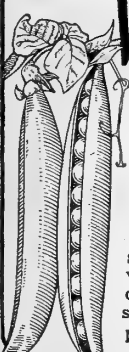
YOU will value Hicks Evergreens now because they make your place quiet and secluded and lessen the noise and dust of the street. A wall of green will help you to live in the country all winter and save the expense of a city residence. Evergreens 15 feet high shipped safely 1000 miles.

Order now Hicks big 20-year-old shade trees for October planting. Satisfactory growth *guaranteed*. Plant now flowering shrubs and berry-bearing shrubs to attract winter birds. Hardy flowers in pots for immediate planting. Send to-day for complete catalogue.

Hicks Nurseries, Box M Phone 68
WESTBURY, L. I.

Vegetable Lore

What to Plant—How to Plant



A MAGAZINE for the benefit of the amateur gardener. Its aim is to teach planting, growing and cooking of vegetables. An all-year companion of the home gardener. No advertisements—no high-sounding terms. Just truthful, understandable advice for the happy men and women to whom the garden is a playground and a patriotic necessity. Full value to subscribers in excess of claims or money refunded. Issued monthly—sample free—\$1.00 per year.

MAURICE FULD, 1457 Broadway, New York


Grow "Golden Seal"

Dried Roots of it sell at \$5 per pound and wholesale druggists are eager to buy them. "Hydrastis Canadensis" or Turmeric Root, also called Indian Dye, thrives from Ontario to Georgia and West to Missouri and Minnesota.

I will ship either roots or seeds direct from my own gardens in the high mountains of Western North Carolina. "Golden Seal" will grow for anybody and the product is more reliable than Ginseng. For best results it should be planted in the fall. Write for price list TO-DAY.

E. C. ROBBINS Pineola, N. C.

Clean, White, Crisp Celery



results from the use of the *Scientific Celery Bleacher*. Easily put on, excludes all the light, weather and waterproof, good for several seasons if handled carefully. Size 12" x 12" \$1.25 per 100. Size 14" x 14" \$1.50 per 100. Free sample on request, as is also our little brochure on many other seasonable garden helps.

The Cloche Co., 131 Hudson St., N. Y.



Here's a photo we snapped just as the owner of the house had attained the evergreen arrangement above ground that he decided to make a permanent one.



Here is the house foundation before the evergreen transformation. Note the stilted, "formidable" aspect of its barren lines

An Evergreen Planting Suggestion Well Worth Following

ONE of the happy facts about evergreen planting is that you can know *in advance* just what effect it will give to your grounds.

You can do as the owner of the house shown above did. When his Bay State evergreens arrived (with each root ball securely burlapped) he placed them about his foundation *above ground*. He then kept changing the location of this one and that one until he got an effect that *exactly suited him*. Then he planted.

Had things just right at the *start*. He has the added assurance that the pleasing transformation he has attained will be a *lasting one*. For he knows that his Bay State Stock has the rugged root power, and the sturdy backbone to withstand rigorous Winters and give him continued pleasure and satisfaction.

You can have that same assurance. Send to-day for our Hand Book of Information.

The Bay State Nurseries

672 Adams Street
North Abington, Mass.



SUNLIGHT

for Hot-beds and Cold-frames

THE latest word in efficiency and economy in Gardening with Glass.

Sash of all sizes carried in stock.

Small, inexpensive, ready-made Greenhouses for summer delivery.

Suntrapz—the wonder working plant boxes that come by mail.

Get our Catalogue of Garden outfits. Free

SUNLIGHT DOUBLE GLASS SASH CO.
927 East Broadway Louisville, Ky.

Hardy Guaranteed Trees and Plants

We guarantee our trees to make the growth the planter has the right to expect. This means: You plant our trees properly, give them due care and attention, and then if any of them fail to grow as you have reason to expect, we will replace them without charge. You are the judge of what you should expect.

"Inside Facts of Profitable Fruit Growing" and "How to Beautify Your Home Grounds" sent prepaid for 10 cents each.

WILLIAM P. STARK NURSERIES
Box 498, *Stark City Mo.*





Plant MOON'S EVERGREENS Now

Planted early in Autumn, these artistic and vigorous shrubs add a distinctive atmosphere of beauty and refinement to your home.

Moon's Evergreens are used extensively for individual or group plantings on lawns, near house foundations or other buildings on your grounds.

They screen anything objectionable that otherwise would mar the attractiveness of the view.

If you have an idea of the plantings you desire, write us for an estimate. We have a catalogue listing our entire selection. It is free. Write for it.

THE WM. H. MOON COMPANY • Nurserymen

Philadelphia Office
21 South Twelfth Street

Morrisville, Pennsylvania

The Moon Nursery Corp.
White Plains, N. Y.



Looking for Something NEW?

HERE IT IS!

The **UNIVERSAL PORTABLE SHELF** hangs on a common nail, anywhere. Supports 20 pounds. Used for books, electric fans, vases, flower pots, lamps, clocks, and 1000 other things.

Enameled white, green, mahogany, tan, pink, blue, gray, gilt, etc.

50c. Each, \$5 Dozen

Booklet Free. Agents Wanted

THE GEORGE W. CLARK COMPANY

259-L Fifth Ave., New York

TULIP BULBS, Postpaid

Price per 100. Twenty-five of a kind at 100 rate, provided order totals 100 bulbs or more.

Gesneriana, red . . . \$1.60	Kate Greenaway, faint pink . . . \$2.00
Bouton d'Or, yellow . . . 1.20	Mrs. Potter Palmer, dark purple . . . 3.00
Caledonia, orange scarlet . . . 1.60	Bar. de la Tonnyay, pink . . . 2.00
Mixed Parrots, feathered edges . . . 1.20	Wedding Veil, light gray . . . 2.00
Mixed May Flowering, all colors . . . 1.20	White Queen, bluish white . . . 2.00
Farncombe Sanders, pink . . . 3.00	Mixed Darwins, all colors . . . 1.60
Clara Butt, salmon red . . . 2.00	
Mad. Bosboom, cherry red . . . 2.00	

As many more varieties in list. Send for it.

ORONOGO FLOWER GARDENS Carthage, Mo.

"How to Grow Roses"

A delightful handbook for rose lovers. Tells how to plant, prune, spray, etc. Editor Barron of the *Garden Magazine*, says: "The book

is a very thorough round-up of what the amateur wants to know about roses." Library edition, 121 pages—16 in natural colors.

Sent postpaid for \$1. Contains coupon worth \$1 with \$5 order for plants. Order now.

CONARD BOX ROSES & Jones Co. 24 West Grove, Pa.

Rob't Pyle, Pres. A. Wintzer, Vice-Pres.

Rose Specialists

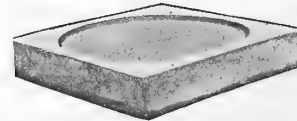
Backed by 50 years' experience



Morris Nurseries

Beautify your home by planting a few evergreens. Don't wait. Every year's growth will add more and more to the attractiveness and value of your property. Our catalog shows you many beautiful varieties and gives valuable suggestions. Do you want a fine hedgerow, some flowering shrubs, climbing vines, roses? You will find all these in the catalog, along with the best things to plant in small and large fruits. Be sure to write for this book to help you in your planning. Address

The Morris Nursery Company
Box 804 West Chester, Pa.



A Charming Birdbath of Artificial Stone

fifteen inches square, three inches thick, hollowed out round two and one half inches deep in centre sloping to three-eighths at edge. Inexpensive, Practical, Artistic.

Price \$2.00. Three for \$5.50, f. o. b. Verona. Verona Bird Houses. Send for List.

W. H. BAYLES Verona, New Jersey

Narcissus Bulbs Ready

Mixture, composed mainly of varieties Poeticus Ornatus, P. Poetorum, P. Pheasant's Eye, single and double yellow Incomparabilis, Stella, Barrii conspicuus, Mrs. Langtry, Dolly Cup, Minnie Hume, with occasional bulbs of other varieties. \$1.00 per 100, \$8.00 per 1000, postage or express paid. Prices on larger quantities furnished on request.

Oronogo Flower Gardens Oronogo, Mo.

Reiber Bird Homes



are always filled with birds—summer and winter—in summer for nesting—in winter for shelter. Reiber Bird Baths and Feeding Stations should occupy a place in every garden, school grounds, Park and Estate. The

Reiber Bird Book

describes and illustrates them—sent free on request.

Reiber Bird Homes, West Webster, N. Y.

THE BEAUTY

of Hardy Phlox can not be imagined. They must be seen both in color and Show. I have over 300 varieties. Send for list.

W. F. SCHMEISKE

Hospital Station, Box 11 Binghamton, N. Y.

DINGEE ROSES

Dingee roses are always grown on their own roots—and are absolutely the best for the amateur planter. Send to-day for our "New Guide to Rose Culture" for 1917—it's free. It isn't a catalog—it's a practical work on rose growing. Profusely illustrated. Describes over 1000 varieties of roses and other flowers, and tells how to grow them. Safe delivery guaranteed. Established 1850. 70 greenhouses. THE DINGEE & CONARD CO., Box 987, West Grove, Pa.



JUST WHAT YOU WANT FOR AN UP-TO-DATE MOVABLE POULTRY YARD

"BUFFALO" Portable Poultry Runways are neat and easy to handle and erect; simply push legs into ground. Made

from 1 1/2 inch diamond mesh, heavy galvanized wire fabric and galvanized round iron frames with 1 inch galvanized Hexagon Netting along bottom, 12 inches high, strong and durable, last a life time. Can be moved to other locations at will. Greatest thing on the market for young chicks or duckling runways or can be used for grown chickens, ducks, geese, etc., and make any size yard you wish. Can also be used to advantage for enclosing small vegetable garden plots, etc.

Standard size sections as follows:

7' long x 5' high	Price, each section	\$3.75
2'6" " x 5' " gate		1.60
8' " x 2' "		2.00
6' " x 2' "		1.60

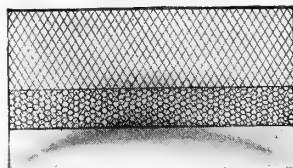
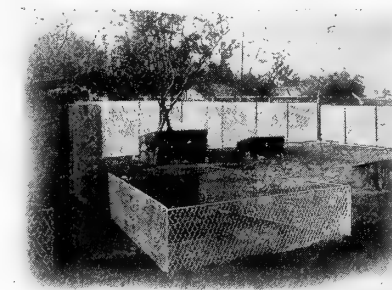
Above prices effective April 1st, 1917. F.O.B. Buffalo and are for orders consisting of six sections or more.

Sizes mentioned above can be shipped from stock immediately. Special sizes made to order on short notice.

Send money order, check, New York draft or currency by registered mail and we will send you one of the greatest articles in existence for poultry or dog kennel purposes.

Booklet No. 67-A will be sent upon request.

Place a trial order to-day, we know you will be well pleased.



ENLARGED VIEW

BUFFALO WIRE WORKS CO. (formerly Scheeler's Sons) 467 Terrace, Buffalo, N. Y.



Beautify and Protect Your Grounds

THIS picture shows the simplicity, sturdiness and good appearance of the Excelsior Rust Proof Fence. Gives protection to the lawn, shrubbery, flowers, etc., yet permits complete view from any point.



FENCE

is made of heavy wires, dip-galvanized AFTER making. Wires are held firmly at every intersection by our patented steel clamps. The heavy coating of pure zinc makes the whole fence rust proof and exceedingly long wearing.

Ask your hardware dealer about Excelsior Rust Proof Flower Bed Guards, Trellis Arches, Tree Guards, etc.

Catalogue B sent on request

WRIGHT WIRE COMPANY
Worcester, Mass.

A COLORADO GARDEN

OF ALPINES AND ROCK PLANTS from the rugged slopes of the Rocky Mountains will condense more joy into a small space than any other style of Fall Gardening. The list includes rare and choice varieties of Anemone, Columbine, Clematis, Delphinium, Gentian, Evening Primrose, Pentstemon, Yucca, Hardy Cacti, and many others not commonly cultivated, all hardy and easily grown.

Besides native plants, we grow and catalogue all the best ornamentals for the Northwest, including trees, shrubs, evergreens and hardy flowers. Either catalogue free.

Rockmont Nursery, Boulder, Colo.

The Magic of a Summer Garden Is Wrought with Hardy Plants

HARDY perennials, which live happily and improve from year to year, give a distinct value to the garden from spring to fall. These old plants are most admired when the Peonies and Delphiniums and Irises bring forth their splendid colors and tints. Even on a small place there is room for these "care-free flowers."

If you are to have an established garden next year, plant large clumps, worthwhile stock, *this fall*—next spring will be too late.

Two Choice Subjects for the Garden

Peonies should be planted in September; Delphiniums in October

Six Splendid Peonies

	EACH
Asa Gray. Pale lilac	\$1.00
Achille. Mauve-rose	.50
Eduilis Superba. Mauve-pink	.75
Felix Crousse. Bright red	1.00
Mme. de Verneville. Blush white	.75
Festiva maxima. White	.75
Entire set of Six varieties \$4 prepaid. Ready for September planting.	

Delphiniums

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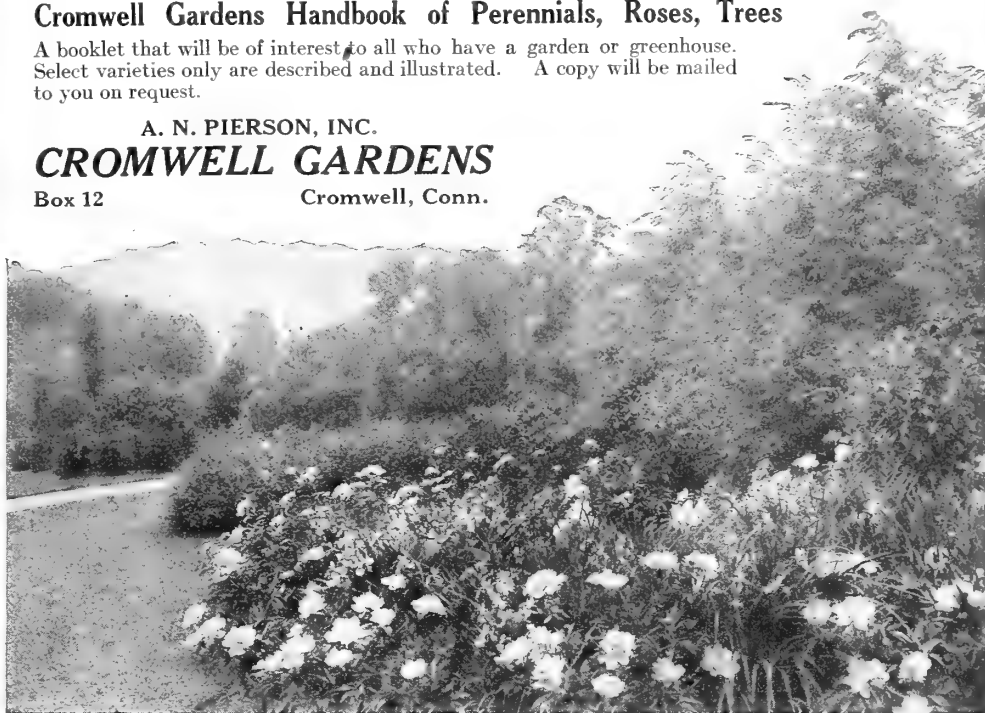
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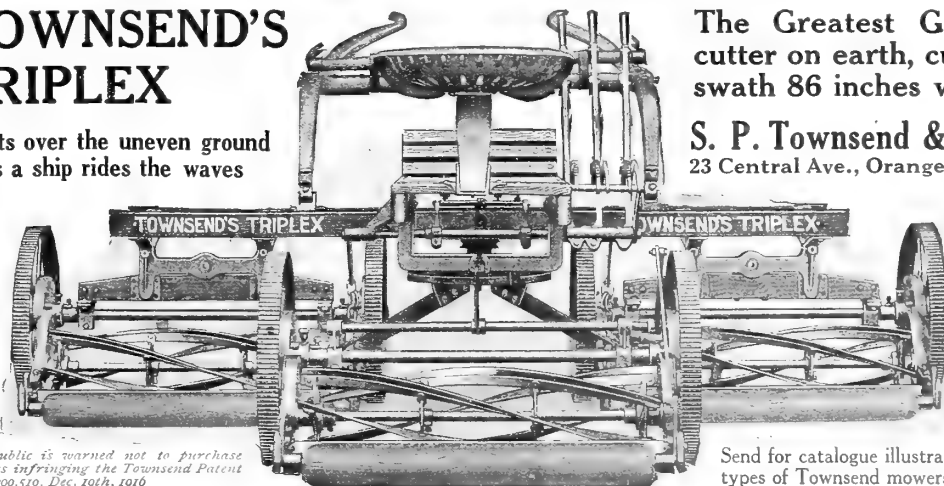
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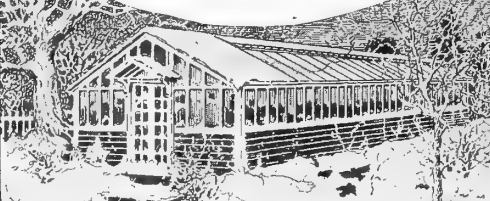
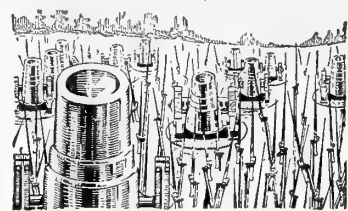
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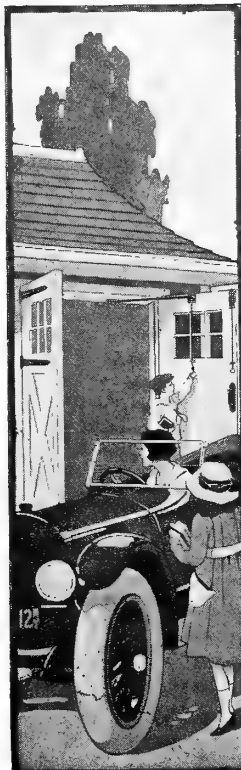
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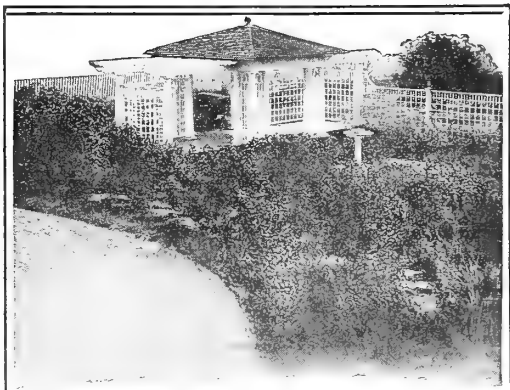
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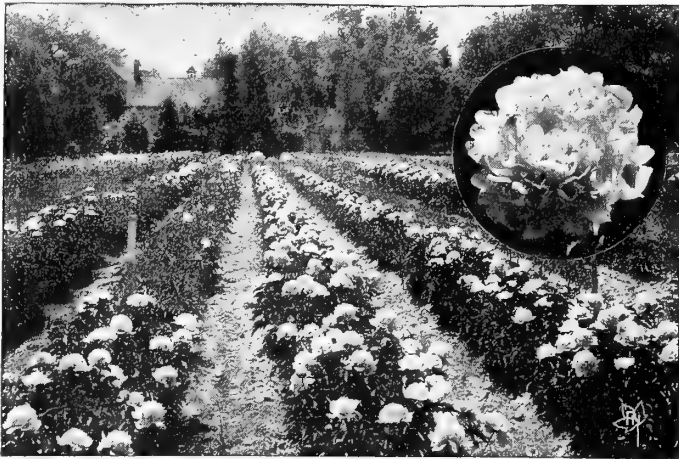
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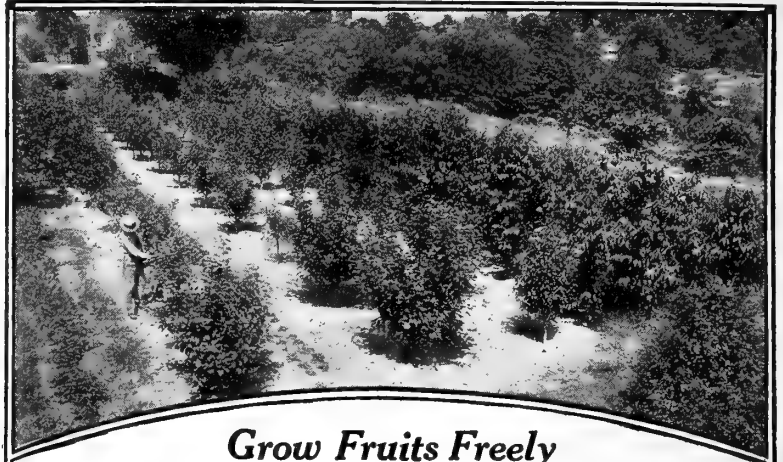
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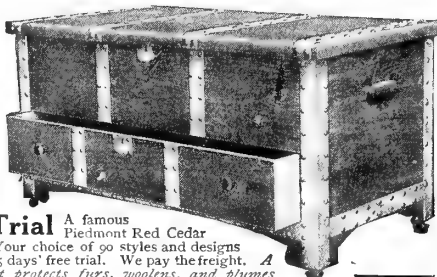
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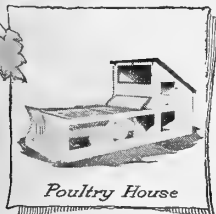
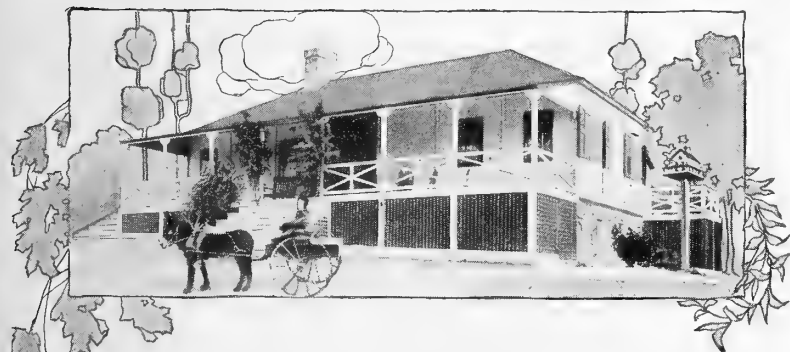
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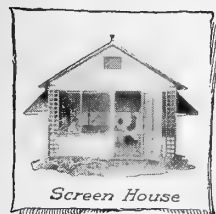
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The GARDEN MAGAZINE

October 1917

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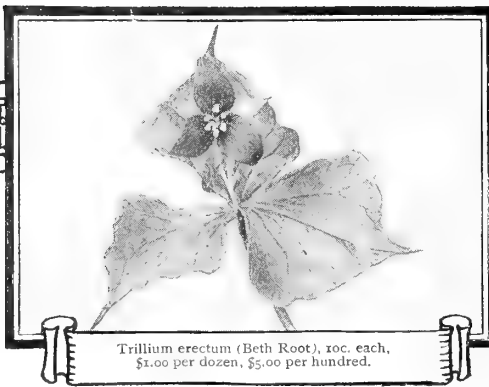
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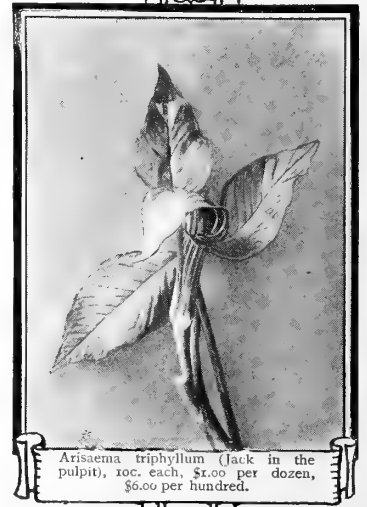




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lip), 15c. each, \$1.50 per dozen, \$7.50
per hundred.



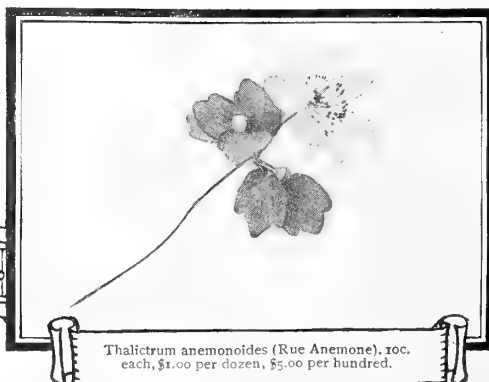
Erythronium americanum (Adonis
tongue), 10c. each, \$1.00 per dozen,
\$6.00 per hundred.



Dicentra canadensis (squirrel corn),
10c. each, \$1.00 per dozen, \$5.00 per
hundred.

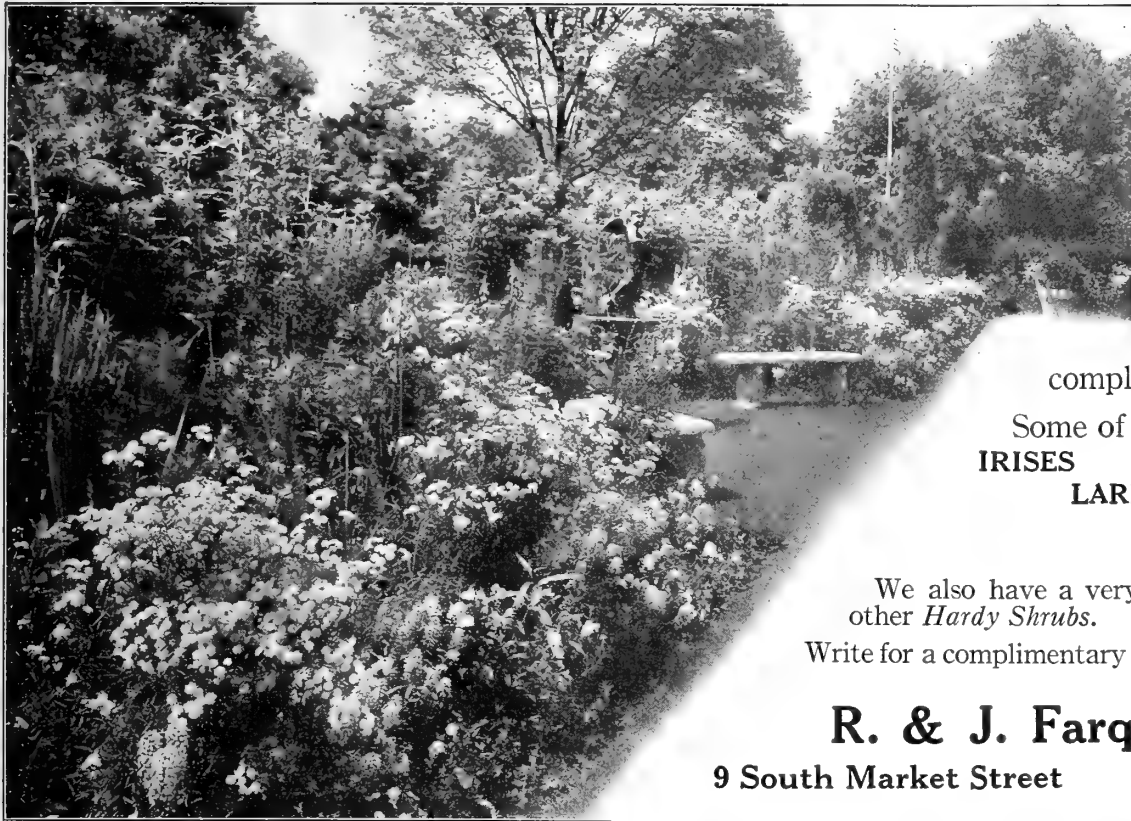


Hepatica triloba (Liver leaf), 15c
each, \$1.25 per dozen, \$6.00 per hun-
dred.



Thalictrum anemonoides (Rue Anemone), 10c.
each, \$1.00 per dozen, \$5.00 per hundred.

Why Wait Till Spring



Now is the best time to plant most of the Hardy Perennial Plants

We devote many acres to the cultivation of this charming class of plants, our collection being one of the most complete in America.

Some of our specialties:—

- IRISES
- LARKSPURS
- PAEONIES
- PHLOXES

We also have a very complete list of *Conifers* and other *Hardy Shrubs*.

Write for a complimentary copy of our Autumn Catalogue.

R. & J. Farquhar & Co.

9 South Market Street

Boston, Mass.

Fruit the Year Around from your own garden

and that garden need not be any larger than 75 feet square! Think of gathering delicious cherries, luscious pears and plums, fragrant quinces and the finest apples right in their prime, fresh from your own trees. Fresh fruit from early in June until February, canned fruits until the new crops come—to help you materialize all this, we offer

32 Standard and Dwarf Trees \$12 Each a Specimen of its Kind

There are 2 "Everbearing" Apple Collections, twelve trees all told; 1 "All-Season" collection of 6 Dwarf Pear Trees of fruiting size; 2 Crab Apples; 2 sour and 4 sweet Cherries, in black, red and white kinds; besides 4 Plums, 1 Prune and 1 Quince Tree. In its entirety this assortment stands for all the fresh fruits, jellies, jams and preserves the average family can eat. *Circulars on varieties free on request.*



Every tree in this assortment is as fine a specimen as we know how to grow. It has taken us several years to get ready to make this offer. Our fruit expert took care of it that the kinds included are the choicest for the home garden, assuring high-quality fruit in large quantities at the earliest possible moment after planting. This is the month to set them out.

Plan "How to Plant Them" Free

A complete blue print of above assortment of fruit trees, most advantageously placed in a square plot and most logically arranged in smallest possible space, will be supplied with each shipment.

Our large catalogue offering a complete assortment of all worth-while fruits and ornamentals free for the asking. Over fifty years' experience and a strong reputation for fair dealing stand back of every plant, shrub or tree you get from us. Write or order NOW.

GLEN BROTHERS, Inc., Established 1866, Glenwood Nurseries, 1820 Main Street, Rochester, N. Y.



PEONIES AND PEONY LOVERS

Here are two collections that will be appreciated by folks who are not in the "fancier" class and yet like to have some peonies of which they can be proud. Both are great bargains at prices given which are much lower than the average market value.

BARGAIN COLLECTION

Achille	\$0.40
Acida . . . . .	.40
Canarii . . . . .	.40
Charlemagne . . . . .	.40
Duchess de Nemours . . . . .	.40
Faust . . . . .	.40
Fragrans . . . . .	.40
Humel . . . . .	.40
L'Indispensable . . . . .	.40
Madame de Verneville . . . . .	.40
Mlle. Desbuissons . . . . .	.40
Zoe Calot . . . . .	.40
Total	\$4.80

Any six for \$2.00; the 12 Bargain Collection for \$3.50.

POPULAR COLLECTION

Alexander Dumas	\$0.50
Berlioz . . . . .	.50
Boule de Neige . . . . .	.50
Festiva Maxima . . . . .	.50
Jenny Lind . . . . .	.50
La Tulipe . . . . .	.50
Madame Calot . . . . .	.50
Mlle. Juliette Dessert . . . . .	.50
Monsieur Kreuze . . . . .	.50
Princess Beatrice . . . . .	.50
Purpurea Superba . . . . .	.50
Triomphe du Nord . . . . .	.50
Total	\$6.00

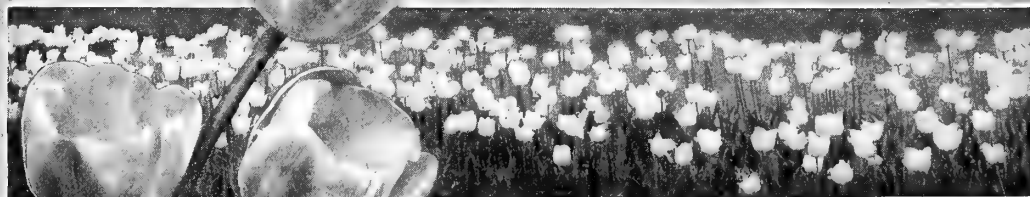
Any six for \$2.50; the 12 Popular Collection for \$4.50.

"Peonies for Pleasure" This book of "Peonies for Pleasure" gives you information on "Peony History," "Nomenclature," "Six Points of Excellence," "A Month of Peonies," "The Lure of the Peony," "An Appreciation," about Peony culture, soil, drainage, fertilizers and how to apply; planting time and how to plant; varieties for cut flowers; how to grow exhibition flowers. This book describes over two hundred of the choicest kinds. If you want information on the plant that stands next to the Rose in beauty, that is practically known to the amateur as simply a red, white and pink Peony, then send to-day for "Peonies for Pleasure."

THE GOOD & REESE CO., The Largest Rose Growers in the World
Box 44, Springfield, Ohio

Vaughan's Darwin and Cottage Tulips

PLANT
THE BULBS
THIS FALL



THESE majestic tulips are without a rival in Spring flowers. Their adaptability to our American climate due to their hardiness and vigor, their stately bearing and exquisite shades make them now the most extensively planted of all spring-flowering bulbs. Planted in beds, in clumps among perennials, or bordering shrubs, their effect in May is beautiful beyond belief.

Reasons for planting Vaughan's

During our forty years of dealings in every bulb growing district of the universe we have worked up a successful and reliable business connection, strengthened by periodical visits of a representative, and latterly a yearly visit to the war-burdened bulb districts of Europe. This should satisfy our readers that our efforts to please have been worked to the limit, and proven by our thousands of constant customers. Last year when many firms disappointed on deliveries, Vaughan's Seed Store were there on time, and with full quantities. These are big reasons for placing your order here.

Twelve Splendid Late Tulips

DARWIN VARIETIES

- BARTIGON.** (24 ins.) Glowing crimson scarlet, vigorous, lasts well in sun, very highly recommended. Doz., 50c; per 100, \$3.50; per 1000, \$30.00.
- MASSACHUSETTS.** (25 ins.) Deep rosy pink petals, with lighter edge. Long cup-shaped blooms on stout stems. A splendid pink, recommended. Doz., 50c; per 100, \$3.00; per 1000, \$25.00.
- CLARA BUTT.** (20 ins.) Clear salmon pink, with lighter edges. We know no better tulip of its color. Doz., 30c; per 100, \$2.00; per 1000, \$17.00.
- WHITE QUEEN.** (22 ins.) Pale blush, changing with age to almost pure white. An exquisite and indispensable flower. Doz., 45c; per 100, \$2.60; per 1000, \$23.00.
- REV. H. EWBANK.** (20 ins.) Deep lilac, toning to pale lavender. Lasts splendidly; a collection is incomplete without it. Doz., 50c.; per 100, \$3.00; per 1000, \$27.00.
- ZULU.** (23 ins.) Violet black, reflecting a glistening violet sheen. Effective when contrasted with lighter shades. Doz., 90c; per 100, \$6.00; per 1000, \$55.00.

(Above prices do not include pre-payment)

No. 1.—Special Prepaid Offer for the above Six
12 of each (72 bulbs) all named for \$3.25.

No. 3.—The Two Collections Prepaid for \$7.50 Free Catalog with each order.

The above offers are subject to safe arrival of bulbs from abroad

Write for Complete Autumn Catalog, (56 pages); mailed free everywhere.

There are many beautiful bulbs and plants, which can only be planted successfully in the fall, that are often overlooked by those who do not realize the importance of Autumn-planting. Our Catalog is a complete and helpful guide for this important season. Write today. (Mention Garden Magazine.)

43 Barclay Street NEW YORK VAUGHAN'S SEED STORE 31-33 W. Randolph St. CHICAGO

COTTAGE VARIETIES

- MRS. MOON.** (30 ins.) Golden yellow pitcher-shaped bloom; tall, upright, sweetly perfumed. Doz., 65c; per 100, \$4.50; per 1000, \$40.00.
- THE FAWN.** (20 ins.) Pale yellowish fawn color, combined with rosy lavender and pale blush margin. Doz., 50c; per 100, \$3.25; per 1000, \$28.00.
- EMERALD GEM.** (18 ins.) Bright orange-scarlet, with sea-green base, margined yellow. Sweet scented and very late. Doz., 50c; per 100, \$3.50; per 1000, \$30.00.
- FAIRY QUEEN.** (22 ins.) Rosy-heliotrope, blending to rosy-lavender, with yellow margin. Inside purplish mauve and yellow. Doz., 50c; per 100, \$3.25; per 1000, \$27.00.
- GLARE OF THE GARDEN.** (18 ins.) Glowing crimson scarlet, dazzling in sunlight; best late tulip of its color. Doz., 65c; per 100, \$4.50; per 1000, \$40.00.
- COLUMBUS (Gala Beauty).** (18 ins.) Golden yellow, feathered and splashed with crimson stripes. A striking combination of colors. Sweet scented. Doz., \$1.75; per 100, \$13.00; per 1000, \$110.00.

(Above prices do not include pre-payment)

No. 2.—Prepaid Offer for the above Six
12 of each (72 bulbs) all named for \$4.75.



Moon's Nurseries

THERE must be a place on your lawn for Lilacs. MOON'S Lilacs are not common Lilacs—they are varied in form and color. They include recent productions of famous hybridizers and old familiar sorts that are most dependable.

No modern lawn is complete without Lilacs. You need them as individual specimens; in the shrubbery border; in the foliage screen that hides ugly views—they are valuable in nearly every kind of permanent planting. In addition to these indispensable attributes they add a crowning virtue of fragrant blossoms in May—blossoms that are quite as useful for cutting for bouquets as for beautifying the lawn.

Autumn is the best time to plant Lilacs. Write us about these and the other hardy trees and plants we offer for every place and purpose. Send for Catalogue A-3.

The Wm. H. Moon Co.

NURSEYMEN

Morrisville, Pennsylvania

Philadelphia Office
21 S. Twelfth Street

The Moon Nursery Corp.
White Plains, N. Y.

Morris Nurseries

Now is the time for fall planting. Send your order promptly, and plant so roots will get set and trees be ready for an early start in the spring. Our latest catalog shows evergreens in large variety, hedge plants, shrubs, climbers, roses, shade trees and the best of everything in large and small fruits.

A fine book, full of helpful suggestions. Write for it to-day and don't delay sending order.

THE MORRIS NURSERY CO.
Box 804
West Chester, Pa.

Hardy Guaranteed Trees and Plants

We guarantee our trees to make the growth the planter has the right to expect. This means: You plant our trees properly, give them due care and attention, and then if any of them fail to grow as you have reason to expect, we will replace them without charge. You are the judge of what you should expect.

"Inside Facts of Profitable Fruit Growing" and "How to Beautify Your Home Grounds" sent prepaid for 10 cents each.

WILLIAM P. STARK NURSERIES
Box 498, Stark City Mo.



Iris and Phlox

With a selection from the choice varieties listed in my Hardy Plant booklet, you can have flowers from spring until frost. This fall is the time to set Iris and Phlox, for, if you do so, they will bloom next year.

If you cannot come in person to select your plants, send your name and address for a copy of the booklet.

Adolf Müller NURSERIES
Norristown, Penna.



We class the following among the most meritorious of our recent acquisitions:

New and rare plants of unusual character have always found a hearty welcome in this nursery. Because of the exacting requirements of our vigorous climate, only the sturdiest survive. Those that prove adaptable here, thrive most anywhere.

Lonicera Maacki podocarpa. This noble upright growing form of Honeysuckle was first brought to The Garden Magazine Reader's attention through the Wilson articles. It attains a height of from ten to fifteen feet, with a spread of equal dimensions. The tips of the highly ornamental foliage are of a curious shade of light bronze. Adorned by groups of scarlet berries late in the season. **Well-grown plants \$1.00 each.**

Berberis Wilsonae. A most charming form of the newer Barberries, introduced by Mr. Wilson from the Chino-Thibetan border. Has gracefully pendulant, twiggy branches, the gray green leaves of which assume beautiful tints in the fall. Yellow flowers are succeeded by loads of round brilliant salmon colored berries. **Well-grown plants \$1.00 each.**

Malus Sargentii. One of the handsomest of all the Flowering Crabs, of dwarf habit. Flowers pure white in immense numbers succeeded by a brilliant display of fruits. One of the most beautiful shrubs in cultivation. **Strong plants \$1.00 each.**

We also offer a most excellent lot of Rígida, Scotch and Austrian Pines in different sizes at fair prices. An inquiry will bring full particulars concerning any or all of above plants.

Digging and packing done with greatest care

Prompt shipments guarantee early and safe arrival

Unusual Catalogue of Unusual Plants For the Asking

A copy of our Catalogue is ready for every reader of Garden Magazine. May we mail you yours?

MOUNT DESERT NURSERIES
Bar Harbor Maine

"HOW TO GROW ROSES"—Library Edition; 121 pages—16 in natural colors. Not a catalogue. Price \$1, refunded on \$5 order for plants. The Conard & Jones Co., Box 24, West Grove, Pa.

MR. ROBERT PYLE—the well-known Garden Lecturer and Rosarian invites correspondence from garden lovers and societies. Subject—"The American Rose Garden" illustrated with finely colored lantern slides. Address: West Grove, Pa.

Plant Evergreens Now

DON'T wait till next Spring. This is the ideal time.

Good full rooted, plump topped trees cost so little more than poor ones, why not have them.

Send for evergreen Help Hint Booklet.

Julius Reehrs Co
At The Sign of The Tree
Box 10, Rutherford N.J.

Stumpp & Walter Co's Timely Topics

October-made Gardens

and practical suggestions what kinds to make

Is fall planting of gardens practical? Decidedly! And, what is more important, some kinds of garden *must* be made this month or not at all until next fall. Most bulbs, kept out of the ground until spring, will lose their vitality and blooming power. For this reason, bulb gardens must be made *now*.

The suggestion to plant flower and vegetable gardens this fall is a rather radical departure. Yet, the idea is thoroughly practical. Best of all, by making gardens this fall, valuable time is gained in the spring when all work is rushing.

Bulb Gardens for Outside and Indoors

The question of getting *Hyacinths, Tulips, etc.*, from Holland this fall is getting more complicated every day. At this writing the outlook is very uncertain. As a matter of protecting yourself, let us urge you to write us at once, stating your needs. If the bulbs come, those who ordered first will be served first. Complete Catalog of our own importations sent on request.



NATURALIZED DAFFODILS

Daffodils or *Narcissi* are among the most charming flowers for outdoor gardens. Plant them in irregular clumps among your shrubbery or in pairs, in the house.

Daffodils, Six Select Sorts, extra fine bulbs. Six bulbs each, six varieties, 36 bulbs in all, \$1.50 postpaid.

Roman Hyacinths are ready for shipping *right now!* They came from France and are the earliest to bloom. The loosely disposed flower trusses are exceedingly fragrant. They are grown mostly in soil, 5 to 6 bulbs to a six inch pot or pan. Planted at once they will bloom around Christmas. White, \$1.25 per doz., \$8.00 per 100.

Narcissus, Giant Paper White, are another French contribution to our indoor winter gardens. Generally grown from 6 to 8 in a shallow glass dish, with bulbs placed among pebbles. They bloom for anybody.

Large Bulbs, 5c. each; 50c. per dozen; \$2.75 for 100.

Jumbo Bulbs, 10c. each; 75c. per dozen; \$3.50 per 100.

Sweet Peas to Sow NOW For Extra Early Flowers

The article on page 47, September Garden Magazine should prove to home gardeners that the advent of special strains of Sweet Peas is revolutionizing the culture of that flower. Prepare right now to surprise your neighbors. By planting any of the following sorts this month, you can gather flowers 4 weeks before spring planted Sweet Peas bloom.

Sow these early, large-flowering Spencer Hybrid Sweet Peas this Fall:—

- Early Snowflake,** best early white
- Early Songbird,** lovely pink, tinted salmon
- Early Melody,** a rose pink, very free flowering
- Early Spring Maid,** light pink on creamy ground
- Early Heather Bell,** beautiful mauve lavender

Any of the above 20c. per packet of 25 seeds.

In addition, 7 distinct and beautiful Australian varieties are described in our special fall catalogue. Please ask for it.

Roots to Plant Now, for Food

A small investment in roots, a few boxes with soil or sand, a few hours' work and you may gather delicious winter salads right from your own cellar.

Witloof Chicory or French Endive has made remarkable progress in popular favor in recent years. The roots are "forced" to yield delicate sprouts as shown alongside. A delicious salad. Extra-selected roots, 10c. each; \$1.00 per doz.; \$7.00 per hundred. Directions how to force them in our free catalogue.

Sea Kale is another unusual winter vegetable of exceptional quality. The sprouts, grown like chicory, are cooked and served with drawn butter. Extra-selected Forcing Roots at same prices as Witloof Chicory.

Asparagus Roots for forcing, best white or green sort, \$1.50 per dozen; \$10.00 per 100.

Rhubarb Roots, extra fine clumps of *Giant Crimson Winter,* 25c. each; \$2.50 per dozen.

Vegetable Seeds Suitable for Fall Sowing

Whether you plan to plant a vegetable garden outdoors or under glass, you will find us in a position to supply you just the sorts needed for different purposes. Here are a few of our special strains.

Carrot, Early French Forcing, pkt. 15c.; oz. 30c.

Lettuce, May King, best early head, pkt. 5c.; oz. 20c.

Peas, Prolific Early Market, ½ pt. 20c.; pt. 30c.

Radish, French Breakfast, pkt. 5c.; oz. 10c.

Spinach, New York Market, pkt. 10c.; oz. 20c.

See catalogue for complete lists.



Stumpp & Walter Service in Seeds, Bulbs and Plants is Complete

Our establishment stands for much more than selling plants, bulbs and seeds at popular prices. What the things we sell will do for you, interests us quite as much as your original order. In order that our business may live and grow, our seeds and bulbs must do well for you! Back of everything we send out stands the cumulative experience of men who have been seedsmen all their lives! You are assured of intelligent and conscientious service every time you send an order to

Stumpp & Walter Co

30-32 Barclay Street
New York



Here is an interesting "link-up" effected with Bay State Shrubs. Note how the house seems to "blend" into the grounds

Bay State Shrubs Will "Link Up"

Your House With Your Grounds Plant Them This Fall

With every Bay State Shrub comes a compact fibrous mass of vigor-giving rootlets. This strong root-growth means strong well-formed top-growth.

DOES your house look as if it really *belonged* to your grounds? Or has it a certain "detached" aspect to it?

If the latter is the case, the chances are that what is lacking is a "link-up"—something to "tie it to" your grounds, as it were.

Bay State Shrubs will do that very thing. Planted about your foundations, their own gracefulness will soften its lines and do away with all evidences of an obvious *boundary* where "grounds leave off and house begins." The effect will be one of pleasing consistency and perfect "one-ness."

Be it shrubs, shade trees, evergreens or *what-not*, you can *depend* on the Bay State stock you plant. Because every plant must stand the rigorous test imposed by our long, hard, New England Winters, before we sell it, Bay State stock has well merited its reputation for *thriving* where other stocks fail.

Give your stock a valuable head start by planting it *this Fall*. Send *now* for our Handbook of Information.

The Bay State Nurseries
672 Adams Street
North Abington, Mass.



Before Pruning Get This Book

It is a practical guide to right pruning. "The Little Pruning Book" will tell you how, when and where to prune your trees and shrubs for vigorous and healthy growth. It contains eleven chapters of sound pruning and pruning shear advice.

Clipping is *work* at best but nothing comes nearer making a pleasure of it than Pexto Pruning Shears. You'll find them at your dealers. Look for the Pexto Tool Displays when you want tools of any kind.

Send to-day for our free circular, or better still send 50 cents for a copy of the book. Your money will be refunded if it is not satisfactory.

The Peck, Stow & Wilcox Co.

MFRS. Mechanics' Hand Tools, Tinsmiths' and Sheet Metal Workers' Tools and Machines, Builders' and General Hardware.

Southington, Conn. Cleveland Ohio
Address correspondence to 2186 W. 3rd St., Cleveland, O



PRUNING SHEARS

The Readers' Service gives Information about Gardening

Why are You Going Away?

Because you wish to find peace and rest from the troubles and anxieties of the present moment? Where can you find more peace of mind and comfort of soul than in your own garden? Now is the time to plant things which next year will transform the home grounds into a wonderland of new delights from which you will be loath to go away. Few factors hold greater surprises than the *unusual* among the *hardy plants*. We grow many by the thousands of some we have but a few.

A Helpful Catalogue

awaits your call. In its own modest way, it will acquaint you with our hardy plant specialties, many of which are not obtainable elsewhere in this country. Please write now!

WOLCOTT NURSERIES Jackson, Mich.

TOWNSEND'S TRIPLEX

The Greatest Grass Cutter on Earth
—Cuts a Swath 86 Inches Wide

Drawn by one horse and operated by one man, the TRIPLEX MOWER will mow more lawn in a day than the best motor mower ever made, cut it better and at a fraction of the cost.

Drawn by one horse and operated by one man, it will mow more lawn than any three ordinary horse-drawn mowers with three horses and three men.

Send for catalogue illustrating all types of
TOWNSEND MOWERS

S. P. TOWNSEND & CO.
23 Central Ave. Orange, N. J.

Now for 1918!

Now that the crops are gathered, it's time to take stock and prepare for an even better garden next year.

IRON AGE Garden Tools

will make your work a lot easier and enable you to accomplish more in less time. 38 combinations.

Write to-day for free booklet.

BATEMAN M'FG CO.
Box 35C Grenloch, N. J.

THE GARDEN MAGAZINE

OCTOBER 1917

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Bound volumes of *The Garden Magazine* give you an up-to-date Cyclopaedia of Horticulture. Six numbers to the volume. Index supplied free. The cost is only \$1.25, when you send back your loose copies.

LEONARD BARRON, Editor



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GARDEN CITY, N. Y.

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Secretary

Entered as second-class matter at Garden City, New York, under the Act of Congress, March 3, 1879



The workroom and adjoining single house were erected for Oliver Iselin, at Glen Head, L. I. Later the large house with its connecting passage was added

GREENHOUSES

Planning with an Eye to the Future

SO DELIGHTFUL, so altogether satisfactory are the pleasures of greenhouse possessing, that invariably the man who starts with a one compartment house, 33 feet long, soon wants one with two.

The two compartment owner finds himself looking with pleasure towards one of four or more.

So strongly established is this phase of greenhouse owning, that we long ago adopted the method of always planning for possible future additions, when laying out and locating one of our houses.

In doing this, much needless expense has been saved for our customers.

Such was the case with the one above.

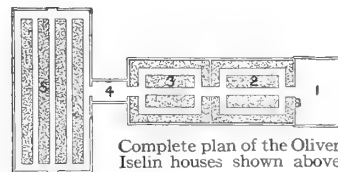
Workroom number one and greenhouse compartments two and three, as shown on the plan below, were first erected. Then the connecting passage, four, and greenhouse five were added later.

We have photos of the first portion which we would be glad to send you, to compare it with the present completed layout.

When you are ready to consider building, let us offer you the advantage of our layout and construction experts.

Their services carry no fees or obligations on your part. One of them will gladly arrange to call at such time and place as you may suggest.

To our catalogue, you are of course welcome.



Complete plan of the Oliver Iselin houses shown above

Hitchings and Company

General Offices and Factory—Elizabeth, N. J.

NEW YORK
1170 Broadway

BOSTON
49 Federal Street

PHILADELPHIA
40 So. 15th Street

Advertisers will appreciate your mentioning *The Garden Magazine* in writing — and we will, too



Farr's Superb Lilacs For Fall Planting

LILAC-TIME is springtime at its best. One can scarcely conceive of a spring garden without Lilacs; every bush a mass of glorious colors, and filling the air with delicate fragrance.

Seemingly perfect, as were the old purple and white sorts, the master hybridizer, Victor Lemoine, touched them with his magic hand, and lo, from them a multitude of glorified forms and new colors appeared, with individual flowers and trusses more than doubled in size; with varieties early and varieties late, thus considerably lengthening the blooming season.

Ellen Willmott, with pointed trusses a foot in length and snow-white flowers nearly an inch in diameter; *Madam Buchner*, white, flushed with soft rose; *Belle de Nancy*, soft lilac pink; the splendid early flowered giant, *Leon Gambetta*, with semi-double flowers almost as large and as perfectly formed as tuberoses; *Waldeck-Rosseau*, great trusses of dark violet. These are but a few examples of the more than 100 new varieties that I grow on their own roots at Wyomissing. All these new Lilacs are unusually free bloomers—far surpassing the old sorts. If you wish these rich blooms in your garden next spring, the plants must be set this fall.

Let me suggest that you plant some of Lemoine's new Deutzias and Philadelphus in addition to the Lilacs. If you had room for only one of each of these by all means try *P. virginianus* and *D. crenata magnifica*—they will be a revelation to you.

Farr's Hardy Plant Specialties

(Sixth Edition, 1917-1918) describes Lemoine's Lilacs, Deutzias, Philadelphus, Japanese and German Iris, more than 500 varieties of Peonies, Evergreens, and Rock-Plants. 112 pages of text, 30 full page illustrations (13 in color). A book of distinct value to garden lovers. If you do not have a copy of this Sixth Edition, send for one to-day.

BERTRAND H. FARR—Wyomissing Nurseries Co.
104 Garfield Avenue
Wyomissing, Penna.

The prices for my Lilacs range from \$1 to \$1.50, with the novelties selling at \$2 each. Readers of Garden Magazine may obtain a collection of choice sorts of my own personal selection of different varieties of Lemoine's Lilacs, 12 plants for \$10; 6 plants for \$5.

With an order for 12 plants you may have without charge a plant of either Philadelphus or Deutzia—please indicate your choice on the order.

Ideal Bulb Planter and Transplanting Tool

Saves
Backaches

makes planting of all bulbs easy. Opens holes from smallest to four inches in diameter, in all soils. Ash handle, steel point, iron foot bracket—made to serve a lifetime. \$1.75 each, postpaid.

Forcers to "Beat" Jack Frost

"Gro-Quik" Forcers will do both, hasten maturity and keep off frost. Easily put up, quickly shifted; many styles and sizes, all prices. Sample Single Wire Forcer, 15c.

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Plant this fall for wealth of bloom next summer, and enjoy the beauties of Columbine, Foxgloves, Larkspurs, Phlox, and hundreds of others.

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The freest and most continuous blooming of all, never without flowers from June until heavy frost cuts it down. Color clear turquoise-blue, it is not equalled for delicacy by any other flower. Strong plants \$2.50 per doz.; \$18.00 per 100. Large stock of this wonderful hardy plant. ORDER NOW.

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in over thirty distinct and meritorious kinds are growing in our nursery. All are as hardy as oaks, as sturdy and rugged as weed and they simply cannot help blooming in your garden next Spring and Summer if transplanted this Fall.

Try these 7 Leaders for \$1.00 postpaid:

Athis, salmon with violet eye
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Sieboldie, an improved Cocquelicot
Frau Anton Buchner, finest white
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Because my stock of both popular perennials, as well as rarer kinds, is one of the largest in the country, and to win them more friends I will supply 20 distinct kinds of merit, my selection, for One Dollar, postpaid. Order them NOW.

Unusual Peonies

For Immediate Planting

While it is not safe to make promises with plants, yet, under favorable conditions, the strong 3 to 5 eye roots which I supply are very apt to produce blooming plants next Spring, if set out this Fall. I renew my offer of last month to send Six Leaders, One Strong Root of Each for \$3.00, by Express.

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American Gardens

The present great difficulty experienced in getting bulbs and plants from abroad is responsible for the constantly increasing sentiment in favor of our own hardy plants. My catalogue describes them all and offers them at attractive prices for choicest quality. Write for the free book to-day.

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GORGEOUS in coloring, of excellent dimensions and growth, adding wonderfully to the beauty of the spring landscape will be the blooms that result from the planting of Thorburn's Bulbs.



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The Garden Magazine

VOLUME XXVI

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NUMBER 3



AMONG OUR GARDEN NEIGHBORS

Regarding "Peonies That Fit," in the September issue of THE GARDEN MAGAZINE, I agree with A. P. S. as to the first, Solfatare. But for a red, strongly urge Eugene Bigot in preference to any mentioned. I do not think Adolph Rosseau as fine a color as Eugene Bigot and neither has it the fullness of bloom. For the third I suggest Madame Calot; or better yet, add a dollar to the price and try Marie Crousse and you will always thank the writer for a dollar well spent.—*W. McClelland, Saginaw, Mich.*

Habenarias This Season.—There has been a wonderful display of Habenaria here this season. I have found *psycodes*, *fimbriata*, *rotundifolia*, *blephariglottis*, *ciliaris*, and all the greenish ones, but *Hookeri*. My most remarkable discovery was a cluster of some fifty plants of *ciliaris* and *blephariglottis*, growing together in a high mountain bog (*sphagnum*) and among them several undoubted hybrids. I am enclosing individual blossoms from two of these hybrids, in the hope that they will keep their dainty coloring until you see them. All the Habenarias do well under cultivation, provided they are supplied with sphagnum, or leaf mold and sufficient moisture. There are few garden flowers that surpass them in beauty.—*Herbert Durand, Ulster Co., New York.*

A Battlefield of a Year Ago.—The following is a letter from a British gardener-soldier at the front to the *English Garden*: "I have just traveled up the line again for the second time. I am not so very far away from the spot where I was last time, but the change that has happened since I left the line toward the end of last year has impressed me very much. I have crossed the old battlefield of a year ago—the ground that we were fighting for so hard—and it is unrecognizable from what it was as I saw it last. Nature has exerted her very utmost to cover up all the terrible havoc that has been done, and it is now a most beautiful garden. It is absolutely covered with flowers as far as the eye can reach, and the effect is most pleasing. The banks of the old trenches are covered with white Dog Daisies, and the vivid red of great patches of Poppies has a splendid effect. There are thousands of beautiful mauve Sweet Scabious and pink and mauve double Poppies. The loveliest flower to be seen, however, is the

Cornflower. It is such a rich, intense blue; there are whole fields of it, and the sight is most glorious. There are some tall yellow flowers, very much like Mustard, and the reddish brown seed of the Dock plant adds to the effect. Here and there are large pools of water, caused by the shell holes. The trees, too, that were blown to bits have thrown out shoots to cover up the ugly stumps. The unlevel nature of the ground adds a great deal to the beauty of the scene; truly a most lovely wild garden. Last year it was a horrible inferno; this year a veritable paradise. It

against winter injury is easily secured. The superb quality, length of keeping after picking and usefulness for many purposes commend many of these. American grape varieties, though less susceptible to winter injury than the European species, occasionally suffer severely. In Bulletin 433 of the Station, observations made at Fredonia and other places in the Chautauqua Grape Belt during three years of crop shortage from winter injury are discussed.

Lack of maturity of the wood of the vines is given as the most common cause of severe injury; and attention to drainage, discontinuance of summer cultivation as weather conditions indicate, the judicious use of cover crops and avoidance of slow-acting forms of nitrogen, are some of the methods advocated for lessening winter injury.

I Have Read Mr. Rockwell's article in the GARDEN MAGAZINE for August with a great deal of pleasure and profit. This sort of article is of great service in furthering the food conservation campaign. You will be interested to know that this Commission, having inspired the planting of some two million more food gardens this year than ever before, has for some time been energetically campaigning for the canning and drying of the surplus production of the summer for winter use and we now estimate that this year individuals and canning clubs will put up some 460,000,000 cans of vegetables and fruits, an amount very greatly in excess of what has ever been previously canned in any one year.—*P. S. Ridsdale, Secretary National Emergency Food Garden Commission.*

Two Fruiting Shrubs for the Home Garden.—There is a great need for fruit-bearing shrubs for the small home garden, shrubs long lived and free-fruited as currants, occupying as little room. Here are two worth trying in northern gardens.

The Chinese Bush Cherry (*Prunus tomentosa*) is not a new plant as seed were planted in the Arnold Arboretum more than 30 years ago. It is now offered by several nurserymen and the Bureau of Plant Introductions of the Department of Agriculture. According to Bailey's *Cyclopedia*, it is a small tree planted solely for ornament, and it truly is ornamental, a bush about 6 feet high and as wide, smothered in late April with a cloud of small pink

food

- 1-buy it with thought
- 2-cook it with care
- 3-serve just enough
- 4-save what will keep
- 5-eat what would spoil
- 6-home-grown is best

don't waste it

The "Neighbors" stand in positions of national responsibility at this time. They are both producers and consumers. (Reproduction of poster by the U. S. Food Administration.)

proves what the Great Gardener can do.—23004, *Private A. Speck, British Expeditionary Force.*

European Grapes for America.—That many splendid varieties of the European grape may be grown in the open air in the grape regions of New York is the experience of the State Experiment Station. Protection



New Chinese Bush Cherry (*Prunus tomentosa*) having pink flowers in April. Grows six feet high

and white cherry blossoms, as pink as a Forsythia is yellow, and in bloom at the same time. No pink flowering shrub at this season of the year is as showy, except the Spring Cherry (*Prunus subhirtella*) whose fruit is not of value. In early July the cherries are ripe, red, tart, and twice the size of peas, thickly on every twig. The skin is finely hairy, an unusual character for a cherry. The flavor is very like the Sour Cherry, yet as a market crop these little fruits will find little favor, but for home use they are excellent, fresh or cooked. They ripen *early*, and the bushy habit fits the plants to small gardens where the usual fruiting trees are too large. As to hardiness—the plant is native to Manchuria, and already is planted for its fruits in the Dakotas.

Mulberries are considered a choice fruit by children, and in the old days were frequently cooked. As a child my objection to them was that they made trees too big to climb safely, that the birds got about all the fruit, and only what fell from the tree to the dirt were mine to eat. A new Mulberry from Western China, *Morus acidosa*, is decidedly a bush, a straggling shrub some six feet high, with lobed leaves, large and small, as all mulberries have. The berries are not large, black, very numerous, and very tasty on a hot day in early July. If the children like mulberries beg the nurseryman to put this plant on the market. It was collected for the Arnold Arboretum in North China by Mr. E. H. Wilson in 1908.—S. F. H.

A New Method of Wintering Celery.—There is a method which greatly simplifies the storage of celery. It has been tested through many years' experience and has proven itself entirely effective. The most extraordinary feature about it is that it is practically unknown.

Select several water-tight kegs. Those which are used to hold salt fish answer very well. Of course, they should be thoroughly cleansed before being put to their second use. These kegs should have close-fitting tops. The best that the writer has used were tops of cheese boxes. Before the ground freezes the celery is lifted from the rows and packed very carefully in a standing position in the kegs. All this part of the work may be done in the garden. The soil is shaken from the roots of

the plant and the plants themselves packed very close together in the kegs with their roots resting on the bottom. After the plants have been thus taken from the ground and packed, the kegs should be removed to a cool part of the cellar where they are to remain through the winter. Before covering the kegs, it is necessary to put about two or three inches of water in the bottom of each. This must be done with great care, for the celery must not be wetted. Use a tube to introduce the water. It will be found necessary to renew the water about every three weeks.

Celery thus stored will be perfectly whitened by the process. It will retain all its fine nutty flavor and is indeed as desirable a winter vegetable as can be wished. It is possible to store about a hundred plants in an ordinary keg.—Archibald Ruledge, Penna.

Beans on Strings.—Having found it hard to get poles for my lima beans, I tried the bush-limas, but, although much improved, their yield to the square foot of ground is considerably less than that of the pole limas. I therefore worked out a plan to grow them on strings, which I have done now for three years with good results, perfecting the details a little each year. The photograph shows my "beanery" just as the beans were reaching the end of their string, in the first part of July. It indicates plainly how the framework is put together. After the ground is dug and before the beans are planted, two strong posts, eight feet above the ground (and about two feet below), are put in thirty feet apart. A wire is run from top to top, and down to pegs at both ends, so as to make it very taut. Next, short stakes are driven in, ten feet apart, in two lines, two feet each side of the line of the tall poles, and wires are run along them about six inches above the ground. The intermediate stakes are necessary to keep the wires taut.

Now, so as to get the fullest return from each yard of land, I set out two rows of lettuce plants on the bed between the wires, and wait for warm weather to come. Usually in the third week of May I put in my beans in a row under each of the lower wires. After the plants are up they are, if necessary, thinned to stand about five inches apart; and while my lettuce is developing nicely, I get my step-ladder out and tie cotton strings from one lower wire across the upper wire and down to the other lower one about 15 inches apart, which gives me three plants to each string. The beans rapidly run up the strings, and the shade they give is beneficial to the lettuce, which is now nearing maturity. In the picture, the lettuce has already been cropped off in one row—a head of Romaine is visible just to the right of the little gardener.

Lettuce is the right crop to use here, because being a leaf producing plant, it takes an excess of nitrogen from the soil, while beans (a leguminous) require less nitrogen than other plants.

After the beans reach the top, I have to tighten the strings, as they will stretch, no matter how tight they were at first. In view of this, I just throw them across the upper wire without tying when first putting them on and then put a loop in them and around the wire when tightening them afterward. If this is not done, the string will sag, and finally almost touch, and although the swinging on a breezy day does not seem to do the beans any harm, it makes it hard for a person to get inside the "beanery" to cultivate the ground.

I have grown lots of lima and other beans

this way, and the only expense is a ten cent ball of heavy cotton string each year, whereas the two posts and the wire can be used again from one year to another almost indefinitely, especially if they are taken up and stored away in the fall. The string is best burnt up with the beanstraw.—H. E. VanGelder, Westfield, N. J.

Fall Sown Sweet Peas.—I am pretty busy but I must take time to tell it. The receipt of the September issue of the magazine calls it to mind. Last November, within two or three days of Thanksgiving, I planted two rows of Sweet Peas. I followed in the most careful manner the instructions given in your paper by the President of the Sweet Pea Society, using seed obtained from one of the most reliable houses in the country. The first pea is yet to put in an appearance. I am no novice, having been brought up on a farm and have grown vegetables and flowers the greater part of my life. Have grown Sweet Peas, but not from fall planting. Therefore, the cause of failure cannot be lack of knowledge of the principles of planting. Should I try again?—J. W. Ginder, Washington.

—With a few exceptions, there is always a degree of uncertainty accompanying fall sowing of any seed in the open, success or failure depending almost entirely on the weather. During the past ten years we have been in the habit of making extensive fall sowings of Sweet Peas, sowing about the middle of November. Such sowings have as a rule been most successful until last year, when the early winter was so mild that the seed rotted in the soil, and we had to resow in the early spring. What I aim at is to sow so late in the fall that the seed may either just *germinate* previous to freezing weather, or lie dormant in the soil until early spring. When we are favored with a good old-fashioned winter, the ground frozen hard from Christmas until March, our fall sown Sweet Peas are safe, and give results immeasurably superior to those from spring sowing. However, the ideal method whereby all risk of failure is avoided, is to sow during October, using the special



Here's a practical bean support made from string

Sweet Pea frame, full particulars of which are contained in my article appearing in the September number of the GARDEN MAGAZINE.—George W. Kerr, Doylestown, Pa.

Leaders of the Societies.—The accompanying portraits represent four leaders in four of the prominent national societies that are fostering and promoting our horticultural interests: At the summer convention of the Society of American Florists, held at New York in August, the presidency for 1918 was conferred on Mr. C. H. Totty, of Madison, N. J., whose service as the introducer of novelties (new Roses and Chrysanthemums especially) makes his name quite familiar to our readers. Mr. Totty has also rendered yeoman service as chairman of the Board of Jurors of the National and the New York International Flower Shows. At the meeting of the American Gladiolus Society, also held at New York in August, Mr. Kunderd of Goshen, Ind., was chosen as the next year's leader and the big exhibition will be in Cleveland. Mr. Kunderd is an experienced grower and breeder, having originated the ruffled type of flower among others. Dahlia lovers who have visited the National Society's shows in September in the last few years will recognize

in Mr. Richard Vincent, Jr., of White Marsh, Md., the genial president and founder of that live organization. He is a grower of florist's



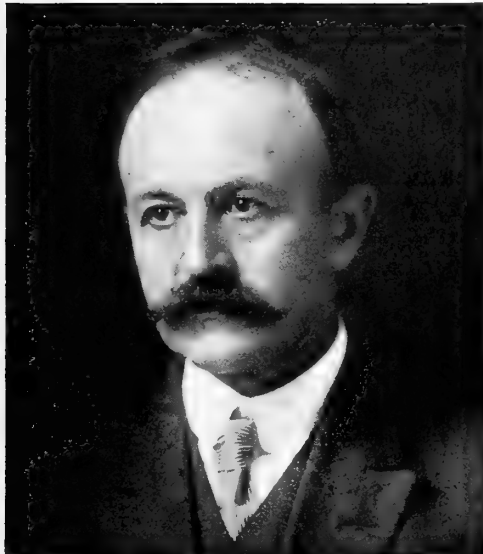
Charles H. Totty, Pres.-elect, Society of American Florists

plants on an enormous scale. The last portrait is that of Mr. Benjamin Hammond, of Beacon, N. Y., very well known as a manufacturer of insecticides, etc. He is now president of the American Rose Society and for several years past its secretary, during whose incumbency the membership has been increased very greatly.

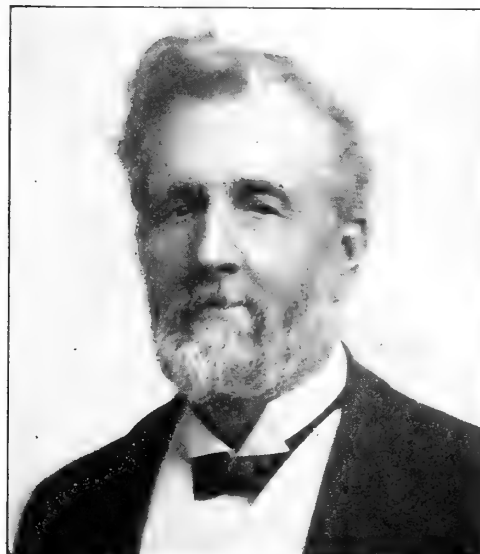
Gardening From the Outside.—Here's a street car newspaper's contribution to the spud stuff.

"A hint to the ladies: If you want potatoes from your garden do not pick the blossoms for a bouquet." They say lots of society people have planted sweets, thinking they were "murphs"—W. M., Detroit.

Has No Rival.—I shall be obliged if you will have sent to me Index and Title page for Volumes XXIII, XXIV, and XXV. I take this opportunity to express my appreciation of the GARDEN MAGAZINE which I consider has no rival in America and deserves a constantly increasing circulation. It is valuable both for the amateur and the professional, and personally I should miss very much not receiving it regularly.—Aubrey Tealdi, Landscape Gardener, Ann Arbor, Mich.



A. E. Kunderd, Pres.-elect, American Gladiolus Society



Richard Vincent, Jr., President, American Dahlia Society



Benjamin Hammond, President, American Rose Society

THE MONTH'S REMINDER

FALL PLANTING AND PREPARATION FOR WINTER

OCTOBER presents more opportunities to increase the value and the permanent beauty of your place than any other month.

Where time is limited, spring work must include so many routine planting jobs and fixing up that frequently there is little time left for special things.

So much has been said of trees, shrubs, herbaceous perennials, etc., in the GARDEN MAGAZINE (see last month's, and previous years) on the advantages of fall planting that it is needless even to recapitulate here. There is one thing, however, that cannot be repeated too often, and the beginner particularly should pay particular heed to it. *Do your fall planting early!*

The term "fall planting" may be misleading. Some people consider fall to begin only with the advent of real cold, freezing weather. Now, while some things can be put in late (until the ground freezes), yet for the majority the safest rule is "the earlier the better," as they need to become "established" before freezing weather.

Give heed to the following considerations in doing your fall planting:

1. Get stock shipped in from the express office promptly and *unpack immediately*.
2. Check up with your order carefully and make prompt complaint of shortage, poor stock, or bad condition.
3. Keep all roots, shrubs, etc., away from wind and sun, and wrap with burlap or water

to keep the roots moist until ready for planting. If several days' delay is unavoidable, bury roots in soil in a shaded place—that is "heel in."

4. Make holes large enough to take the ball of roots easily, and enrich the soil with well rotted manure and bone meal. Plant in well drained positions.

5. Pack the soil firmly about the roots, pressing down with the foot or a tamper, so that the tree or plant is in the soil almost as firmly as if it had been growing there.

6. Use water if the soil is dry, but not on top of the soil! Pour in water before planting, let it soak away and put in more when hole is half filled up. Leave an inch or two of loose soil on the surface after planting.

Winter-Flowering Bulbs

DETAILS of planting in pots, bulb pans, flats and storing in the coldframe, cellar, or pit preliminary to starting the bulbs have already been described in detail in the GARDEN MAGAZINE for September. [At this writing it is assured that a limited supply of Dutch bulbs will reach us for planting this fall. There is, also, a small supply of domestic grown bulbs available but the total quantity will only just meet normal demands. Therefore *place orders at once.*—ED.]

Are All New Plants Ready for Winter?

ARE all the perennials and biennials (started for next year) in their winter quarters? Those started early enough for transplanting to permanent positions for flowering in the spring and early summer ought to be in place by this time and making good growth. Transplant to winter quarters, as soon as possible, smaller plants to be "carried over" under mulching or in frames. Avoid any severe check by shading and giving plenty of moisture, so that they may become as sturdy as possible before growth stops. The mistake is made frequently of merely sticking in these things, and letting them go without further attention. A little liquid manure or nitrate of soda and frequent weeding or cultivation to keep the soil loosened up, and an occasional good watering, in absence of rain, will do just as much now to promote rapid growth as in the spring.

Make Your Cuttings Before Frost

THIS is the time for making cuttings of soft wooded plants, such as Geranium, Heliotrope, Fuchsia, Verbena, etc. The new late summer growth, which is beginning to "ripen up" is crisp and firm; and the temperature conditions are right to make the work of rooting the cuttings easy. It is not necessary to have a greenhouse to root these things. An ordinary flat filled with clean, gritty sand and a layer of sphagnum moss in the bottom may be used as a "cutting-bed." Placed where it will get plenty of light without direct sunshine, and covered or closed in at night to keep the temperature at 40 degrees or so, the slip will give good strong rooted cuttings within the next four or five weeks. The little plants may then be potted up and carried along in a deep warm frame, or in the house or conservatory, and will make good strong plants for flowering next spring or setting out of doors in late April or May. Make the cuttings two to five inches long, removing the lower leaves and cutting the others back about a half. They may be placed in the sand about as close together as they will stand and should be put into it about half their length. Keep the sand moist but not wet. Give a light sprinkling or spraying for the first few days to keep the plants from wilting but not enough to wet the sand, which should be kept rather dry until the cuttings have got over their tendency to wilt.

Plenty of Plants for This Winter's Bloom

WHETHER you have a frame, a conservatory, a greenhouse, or just a "flower-window" you can provide yourself with annuals for winter bloom by sowing the seed now in a frame or in a sheltered place. Use light soil, cover lightly, give one good sprinkling and then keep the soil covered with pieces of moist newspaper or a pane of glass—not quite air-tight—and in ten days to two weeks after sowing you should have an abun-

dance of such things as Stock, Clarkia, Calendula, etc., coming on to give good plants for pots or window boxes.

Why Not Eat Strawberries This Winter?

ANOTHER opportunity, generally overlooked, is that of growing strawberries in the frame for an early crop. Very often frames are allowed to stand idle all winter. Take up good strong plants now and put in generous sized pots of rich soil, water them and keep them shaded for a few days. The pots for the present may be merely sunk in soil up to their rims to prevent their drying out rapidly. On the approach of cold weather put them into the frame where they can be given some protection with sash or shutters. It is not intended to keep the frost from reaching them, as they should have a resting or dormant period of at least several weeks before being fruited. If one has a greenhouse they can be brought in at any time during the winter. If not, they can be kept in the frames, and by starting them into growth under the sash in February or March will come in some weeks ahead of the crop in the garden.

DO THIS MONTH

1. Do plenty of fall planting—but get it done early!
2. Put hardy perennials and biennials into winter quarters.
3. Make soft-wooded cuttings for winter and spring plants.
4. Take in "stock" plants of Geranium, Heliotrope, etc.
5. Start annuals for indoor bloom.
6. Provide strawberries for winter and spring fruiting.
7. Get the under glass crops—lettuce, radishes, etc.—under way.
8. Take care of the tender bulbs in good time.
9. Get after the aphids in frames and indoors.
10. Keep on sowing seed for next year's crop of "humus."
11. Get ready materials for mulching next month.
12. Get your bulbs planted for winter bloom indoors.

Get the Under-Glass Crop Under Way

IF YOU have any glass on the place—and if you haven't there is yet time to get some before freezing weather if you order at once—give attention now to the crops for fall and winter.

Have clean soil in the bed or benches in which lettuce, radishes, tomatoes, etc., are to be grown. It pays to put in fresh soil even at considerable trouble and expense. The old soil may be kept for potting up and using in flats for vegetables, etc., in the spring, or as compost for the garden. The soil for all these things should be, of course, made very rich. If manure is used let it be very thoroughly rotted, and fine. Much more is used than would be applied on an equal amount of space outdoors. The vegetables grown under glass have but 25 to 50 per cent. as much room as they would have in the open and, therefore, the soil must be made proportionately richer. In addition, it is desirable to keep them growing as rapidly as possible so that the same space can be used again. As soon as the various crops are well started, or within a week or so of setting out or transplanting, liquid manure or liquid nitrate of soda—a tablespoonful dissolved in two or three gallons of water, applied with an ordinary sprinkler—will be very helpful in giving both flowers and vegetables a strong start.

Time to Retire the Tender Bulbs

EVERY year thousands of dollars' worth of tender bulbs of various kinds are lost by being left in the soil after they should have been taken in. Of those ordinarily grown, which will be injured or killed outright by the first severe freeze, there are tuberous Begonias, Caladiums, Callas, Tuberoses, Cannas, Dahlias, Gladiolus, Tigridias, and others of similar character. Of these, the first four mentioned are particularly tender and should be taken indoors immediately after the first light frost, which will blacken the foliage. Lay them in some warm, sunny place to dry, and cure under a greenhouse bench for instance. The others may remain until the foliage has been killed down, when it may be cut off six inches or so above the ground and unless severe cold weather threatens the bulbs may be left two or three weeks longer. Take them up before the ground begins to freeze up at night, however.

Get After the Indoor Aphids Early

ANOTHER matter likely to be neglected in the rush of cleaning up the fall work out of doors is attention to plants in the greenhouse or started in the frames. *Don't let the aphids get a start!* Tobacco dust or tobacco stems around the plants will help to keep them away but cannot be relied on altogether. Thoroughly fumigate or spray from time to time. The simplest, surest way is to spray or fumigate the plants regularly every ten days or so whether any aphids are to be seen or not, using one of the commercial preparations of tobacco-extract such as Aphine, Black-leaf 40, etc.

Keep on Planting Cover Crops

REFERENCE was made last month to the advantage of sowing all the space in the garden as soon as available with rye, or better still, with rye and vetch together, to form a cover crop for the winter and a crop for plowing or spading under in the spring. Keep up this work until freezing weather. Sow the seed extra thick, work it in with a rake and if the soil is dry give a good watering to assure prompt germination. To get big crops you must keep your garden full of humus. Don't begrudge the slight expense involved, even if rye is extra high-priced just now—so is fertilizer, and so are vegetables. Your cover crop will save fertilizer and help you grow more vegetables. [Read the article on page 86—ED.]

Get Mulching Material Ready

FALL preparation for the winter by mulching is one of the important factors in keeping a place in good condition. While it is too early as yet to apply the mulch it is not too early to begin gathering the material required. The advantages of getting it now are several. You can put it under cover and have it dry and ready to use and immediately available. Clean, dry leaves are good for many kinds of mulching. A convenient way of gathering and storing them is to get some old burlap or grain bags and stuff them full of leaves as fast as the latter accumulate on lawns and drives. Marsh hay is better for some purposes than the leaves, especially for mulching strawberries, as it "stays put" and does not decay or remain wet in the spring. If there is not room to keep this under cover, have it piled in a neat stack near the garden or where it will be wanted for use. If properly "capped" when it is put up, it will shed rain and remain dry enough to use whenever wanted.



Root-vegetables in a trench ready for covering with hay. Afterward mound up with earth. Blankets or mats are used temporarily till real cold sets in



Storing apples, potatoes, etc., in crates or barrels in a cellar is convenient. They may be picked over from time to time if necessary

Keeping It When You've Got It F. F. ROCKWELL

STORAGE OF GARDEN PRODUCTS FOR THE WINTER WITH OR WITHOUT A CELLAR, INDOORS OR OUT

SOME clever paragrapher once said: "There are a thousand ways of making money, but only one way of having it—that is, to keep it" and the same may be said of the products of the garden.

There are problems in the way of growing things, yet you will find a dozen gardeners who succeed in growing all, or more than, they can use where you will find one who *saves everything that could be saved after it has been grown*. It is a mistake to assume that the saving of the garden products is less important than growing them in the first place. At the present time when there is the prospect that within a few months hundreds of thousands of our own people and of our allies will be seeing the shadow of starvation, there is every reason for each one to do his or her utmost to save everything from every garden, large or small, that can be saved.

Why Vegetables Spoil

VEGETABLES and fruits spoil, many of them in a very short time after being harvested or picked, as the result of the presence of certain bacteria which attack them immediately and start the processes of decomposition or decay. To make vegetables or fruits "keep" the gardener or housekeeper has to prevent the bacteria from attacking them. In canning or preserving these bacteria are kept away by the can or jar after all those present in the material to be canned have been destroyed by heat sterilization. That is why a leaky jar or can will quickly spoil—the germs get back into it again.

Another way of keeping fruits and vegetables is to lower their moisture content to such an extent as to prevent the destructive bacteria from making their attack in the usual way. That is what is done in drying, or, to use the more modern term, evaporating or dehydrating, fruits or vegetables.

A good many vegetables and fruits will "keep" for many weeks or even months if they are given the conditions of environment required to keep their texture or cell structure in a normal state. That is what we do in "storing" vegetables and fruits for winter.

Methods of canning and drying have already been described at length (*GARDEN MAGAZINE* for July).

What Can Be Saved By Storing

THE number of things that can be kept through the winter by storing, without artificial preservation of any kind, is much greater than commonly realized.

The things which may be kept until early spring include beets, cabbage, carrots, celery onions, parsnips, radish, rutabagas, salsify, squash, pumpkins and turnips. Those which may be kept for a number of weeks include cauliflower, sweet corn, lettuce, endive, peppers, egg-plant, melons and tomatoes. Making full use of both groups, the "winter garden" becomes a thing of real utility.

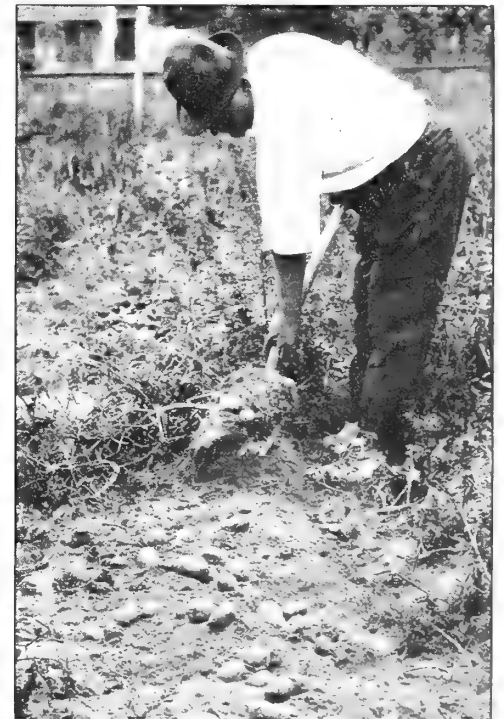
Different methods of storing are required for different groups. The beginner must know exactly what is meant when told to "store in the cellar" for winter, or to keep "in the store-room" at "a suitable temperature." The temperature suitable for some things is entirely un-



Cabbage upside down in a trench. Fill level with light soil and mound to shed water



This tells the story of storing celery. The earth is packed well about the roots only

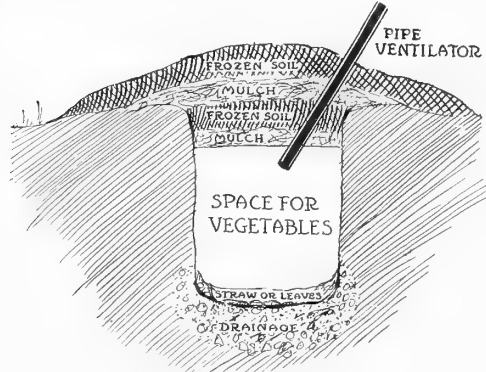


Potatoes are dried off where dug for a few hours before storing in a dry frost proof cellar

suitable for others. Sweet potatoes will decay in a very short time under conditions in which ordinary white or Irish potatoes would keep perfectly; while Irish potatoes would get soft and begin to sprout if stored where sweet potatoes would keep.

Where and How to Store

THE best and the most convenient place for storing most of these things is a cellar. Cellars, however, vary greatly. To keep most of the vegetables to be stored properly the cellars usually made nowadays are not so good as the more old-fashioned ones, which were more



The outdoor pit as it should be

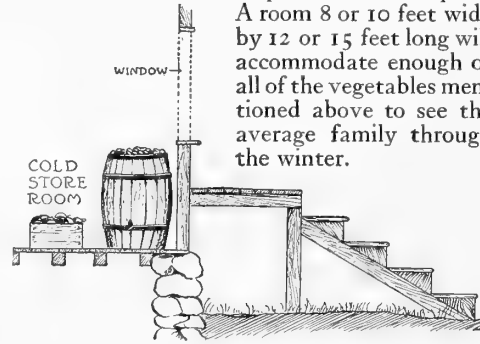
completely underground and consequently remained at a more even temperature, and were dark. While too much moisture in a cellar is likely to increase the chance of things spoiling by decay, a cellar in which the air is kept dried out by artificial heat is almost as bad. Stone walls and a good dirt floor in a well-drained position seem to furnish just about the amount of moisture necessary to keep vegetables sound and plump without stimulating moulds, mildew and the various forms of decay.

Such a cellar is not commonly available nowadays, however. The problem is, therefore, to do the best that can be done with existing conditions, which are likely to mean a small one-roomed cellar with enough small windows to keep it well lighted, a concrete floor, and a hot air or a steam furnace. With a cellar of this kind it is next to impossible to keep the temperature low enough or the air moist enough to have vegetables keep as well as they should. Usually, however, there is space enough to partition off a small room to be used for vegetables alone, where conditions can be controlled independently of the rest of the cellar. This need not involve a great deal of expense. Rough pine 2 by 4's run from the floor to the ceiling, spaced 32 inches apart to centres and then covered inside and out with "wall board" which can be obtained in strips 32 inches wide, and in any length desired up to 12 feet or so, will give a substantial partition with a 4 inch dead air space that will effectively keep out the heat from the part of the cellar in which the furnace is situated. If the strips of wall board are bought of the right length there will be little or no sawing and fitting to be done and necessitate not more than a day's work in putting up the whole thing. Double doors should be placed at the most convenient point in the partition. These also can be made of wall board on light wooden frames; or secondhand doors which can usually be obtained at a very reasonable figure.

Ventilation is an important point. That part of the cellar or other room which you plan to use for storage purposes should be provided with at least one and preferably two windows. They need not be large, but one of

them at least should be well up to the top of the cellar or room. These windows also should have double sashes or be provided with wooden shutters, especially in sections where the temperature goes much below zero. In case only glass is used, a substantial shade or curtain of burlap or some other material should be supplied by which the room can be kept perfectly dark.

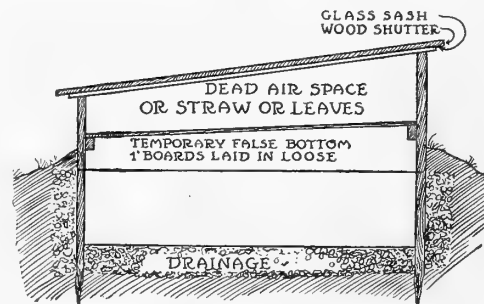
If there will be more than a few bushels of such bulky things as potatoes, beets, carrots, turnips, etc., to be stored for the winter it will be advisable to provide bins of suitable size and so arranged that the boards on the front sides will slip into place loosely and can be removed. Substantial shelves over the bins will give practically as much space for putting barrels, crates, boxes, etc., as would be had without them. By making preparations of this kind in advance to utilize all the space available, a very generous winter supply of vegetables can be put into a small space. A room 8 or 10 feet wide by 12 or 15 feet long will accommodate enough of all of the vegetables mentioned above to see the average family through the winter.



The cold room will keep most crops

No Cellar! Then What?

IN MANY cases, however, there will be no cellar available. The best substitute is a small room or a large closet, which can be used exclusively for a store room for this purpose—if possible the coldest room in the house, and on the north or west side. If necessary a partition (like that already described) can be



A hot bed can be pressed into service

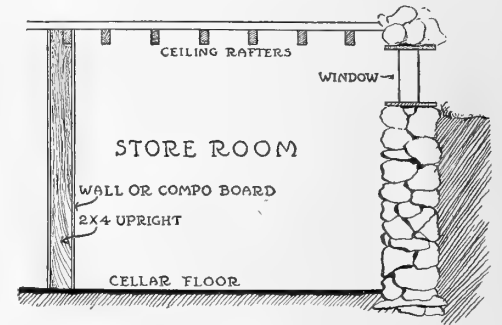
put in with little trouble. Make provision for ample ventilation and for keeping the room dark. If it can be provided with a window or a small door through which things to be stored can be taken in directly from the outside instead of being hauled through the house, that will of course be a great advantage. A few steps or a short ladder against the outside of the house will often make it possible to utilize this means of bringing things in.

The Time-Honored Pit

EVEN where there is no cellar and no room available in the house which can be used as a storeroom, provision for keeping a good supply of vegetables can be made without a great deal of trouble. A "vegetable pit" may be made in any well drained position. This is often so arranged as to form a com-

binational vegetable pit and deep hotbed. As the winter supply of vegetables will be pretty well used up by March or April the frame can be used after that date for starting the spring supply of vegetable plants.

Where even a frame pit of this kind is not available or there are more of the bulky things than there is room for in the cellar or store room, a good many of the vegetables may be kept in a simple trench or pit made in the open ground and given suitable protection. It is, of course, essential that good drainage be given, as any water collecting and standing in the bottom will mean sure ruin to the things stored.



Detail construction of the store room

Putting Away the Foods

THE vegetables easiest to store for the winter are potatoes, onions, and cabbage. Potatoes may be kept either in bins or tight or slatted barrels, or if more convenient, in bags. They should be well dried off before being put into storage, but not exposed to direct sunshine even in bags for more than half a day or so after digging, as they will very quickly "green up" and become bitter in taste. To keep them at their best maintain a temperature at as near 34 to 36 degrees as possible. For some weeks after storing, when the outside temperature will average a good deal higher than this, the windows or ventilators should be kept closed during the day and opened at night. In this way the average temperature of the cellar or store room can be kept 10 degrees or so lower than the temperature outside.

Onions, (which are harvested in August or September considerably before potatoes usually are dug) are best not put into winter quarters until danger of hard freezing weather. After harvesting store temporarily in some open shed or other sheltered place where they can get all the air possible while being protected from rain and early frosts. After the tops are thoroughly dried they are cut off and the bulbs stored in regular onion crates or in slatted barrels which permit free circulation of the air around and through the bulbs. This is highly important, as otherwise they will "sweat" and either sprout or rot, in either case being unfitted for going through the winter. While potatoes will keep as well or even better stored directly on a dirt floor, onions must be kept away from any source of moisture. The white varieties of onions and the extra large or "Spanish" type, such as Prizetaker, Giant Rocca, Denia, etc., are not as good keepers as the medium size yellow and red sorts, such as Yellow Globe Danvers, Southport Yellow and Red Globe and Red Weathersfield. The former therefore should be used first if one has both types to store. In putting up onions for storing it will pay to look them over individually before putting them into winter quarters and sort them out, placing the most perfect and firm specimens by themselves and using the others first.

While cabbage will keep in a cellar or store room where a low temperature can be maintained, part of the crop should be put in a pit or trench for spring use as it will keep longer there than indoors. Where there is not ample room in a cellar, space may be saved by taking the heads up with the roots attached, tying several together and suspending them from hooks or nails in the cellar rafters. For this purpose ordinary "corn ties" of stout tarred string with a wire clip at one end for fastening are very convenient. The heads to be stored in a trench should have the stems and most of the leaves left on and be packed in an inverted position.

Keeping the Root Crops

THE various "root crops," including beets, carrots, turnips, rutabagas, parsnips, salsify and winter radish are also easily kept, but to remain in the best of condition require more moisture than potatoes. For that reason they do best if packed in sand or light soil. This, however, has some objections as it is very heavy to handle and in case a store room in the house is being used involves a considerable "mussing-up." Sphagnum moss can be used as a substitute for sand or soil as it holds moisture for a long time and has the advantage of being clean and very light to handle. The method of packing vegetables in moss is shown in the photograph on page 95. These crops may be left in the ground until danger of hard freezing weather. Before storing the tops are removed, but they should not be cut off too close to the roots. Leave half an inch to an inch of the stems with the roots. Store as soon as possible after digging, so that they will not be exposed to the sun and wind. A store room, being more dry than a cellar, is not so satisfactory for storing vegetables of this kind; they may, however, be easily kept in a trench or pit, which will bring them through in the best condition for use in late winter and early spring. Parsnips and salsify, being perfectly hardy, may be left out where they grew for use as soon as the ground thaws out enough to make it possible to dig them.

Celery is one of the most appreciated of winter vegetables, but requires special attention in preparing for storing. The part



Remove the tops from parsnips in preparing for storage

of the crop to be used during fall and early winter may be kept most conveniently in a trench out-of-doors. This should be dug about a foot wide and deep enough so that the plants when packed into it upright will come about level with the surface. They are put in with the roots and soil on, but dry when packed away. Upon approach of severe freezing weather the trench can be covered up with a mulch of marsh hay, straw, or leaves. For the winter supply use narrow boxes about a foot wide and deep enough to take the celery pretty near to the tops of the leaves when packed away in an upright position. An inch or two of soil or light sand is placed in the boxes and made moist before the plants are put in. These boxes can be placed in a cellar or store room. They should be examined from time to time and if necessary given enough water to keep the plants from wilting, applying it to the roots only. Even though quite green when put away the stalks will come out white and crisp when they are wanted for use.

Warm Temperature Vegetables

SQUASH, pumpkins, and sweet potatoes, unlike all the vegetables mentioned above, which keep best at a temperature a few degrees above freezing, will keep in a fairly warm place, 45 degrees or more, and as dry as possible. Where there is an upstairs room, a closet or an attic with a chimney or stove pipe going through it, it is an easy matter to arrange a few shelves on which to store these things and in this way they may be kept until well into the spring.

Tomatoes, Corn, and Cauliflower After Frost

OF THE several vegetables which may be stored for some time, thus having them for a number of weeks after they are usually "out of season," tomatoes, sweet corn, cauliflower and melons are the most important. Tomatoes which have attained nearly their full size will ripen up gradually after being picked if kept in a cool, shady place. Put in the window in the hot sun, as they frequently are, to ripen, they merely "cook." The fruits to be ripened should be picked with the greatest care and either wrapped individually in tissue papers or packed in excelsior or dry sphagnum moss or dead grass in small crates or in a cold frame where they can be covered when a dangerously cold night threatens. A few of the best plants may be taken up by the roots after the ripe fruits have been picked and hung up in the cellar or store room or a frost-proof shed and will keep in good condition for a long time.

Mr. Robert Livingston, of Ohio, well known as the originator of so many splendid varieties, thinks the best way of preserving tomatoes for winter is to take ripe and sound fruits, free from any cracks or blemishes; place in a stone crock and pour over them cold, very strong brine. Cover the crock with a clean, white cotton cloth held in place by an inverted plate. Keep the receptacle in a clean, dry cellar. To prepare the tomatoes for use, soak them in fresh, cold water for 12 to 24 hours, when they may be peeled and sliced like fresh fruit. When handled in this manner, tomatoes keep from four to six months.

Sweet corn, of course, is likely to succumb to the first frost. If, however, the plants are cut—preferably just a day before the first freeze is to be expected—and placed in small shocks the mature ears will remain in fair condition for quite a long time, as the sap in the

stalks and leaves keeps the ears from wilting as they would if pulled off. They can then be gathered as wanted from the cut stalk and while not so good as summer corn fresh from the living plants will be considerably better than having none at all.

Cauliflower, while similar to cabbage in many respects, cannot be stored in the same way. If, however, the plants which still have immature heads or "buttons" on the approach of freezing weather are taken up by the roots and set closely together in a cold frame or hot-bed and given an occasional watering if necessary to keep the soil moist, they will continue to develop and keep fresh and plump for some weeks.

Brussels sprouts—another cousin in the cabbage family—are so hardy that they can be left out of doors where growing without any protection for use up until Christmas or even after.

Nearly mature plants of lettuce and endive can be put into the frames in the same way, care being taken to keep the foliage dry and the soil moderately moist. All these things should be protected from hot sun by muslin covered sash or some similar device.

Peppers, eggplant, melons and cucumbers may be picked and stored as described for tomatoes and will keep in good condition for a considerable length of time. The greatest care should be exercised, however, to get good sound specimens and to handle them like soft-shelled eggs.

The temperature for cauliflower, lettuce and endive handled as described above should be kept as cool as possible down to 35 to 40 degrees at night, while for tomatoes, melons and the other things mentioned, ten or fifteen degrees more will be better.

The most careful examination must be given everything that is to be stored before it is put into winter quarters. With both fruits and vegetables it is preferable, where convenient, to go over everything as late as possible in the season. It will frequently be found that some specimens that looked perfectly sound and healthy at harvest time have begun to show signs of spoiling in the following few weeks. If these are thrown out or put aside for immediate use it will often save the remainder.



By keeping carrots, beets, etc., in compartments they are easily reached

Making Next Year's Garden Soil Better

H. F. BUTTON, N. Y. Specialist in Soil Fertility
State School of Agriculture

[EDITOR'S NOTE: Now, as we stand with the season's experience behind us and the certainty of a needful season ahead, is the right time to plan to bring our garden soil nearer to its maximum of productiveness in order to secure the best returns from our labor and seeds next year.]

THE problem of a garden soil differs from that of a field soil only in its intensity. In field crops the amount of labor, per acre, is much smaller and the interest on the land is less, making it possible to secure a profit from lands of less productivity. In a garden, on the other hand, the amount of labor is very great and the soil usually of so much greater value, that, unless the soil is kept at its maximum of fertility, the overhead expenses will make the garden show a net loss, instead of a profit. The problem of maintaining this high level of productivity, may be properly considered under three headings:

1. *Physical factors*, which include the amount of available water, the size of the soil particles, the number and size of the air spaces, drainage, temperature, and color.

2. *Chemical properties* of the soil, which include the amount of available nitrogen, phosphorus, potassium, calcium, etc.

3. *Biological factors*, which include the presence of beneficial or injurious animal life and the proper relations of bacteria.

The Part of Water

THE best garden soils are rather sandy in texture, although this makes little difference to the person whose soil happens to be of clay or silt. The sandy soils are more easily worked and give the more ready response to the fertilizer applied.

A good garden soil is usually rather porous, and contains in the neighborhood of fifty per cent. of pore space, which allows of rapid movement of water and air. Soils of this nature do not hold quite as much available water as clay loams and for that reason every effort must be made to increase the water-holding capacity, as it is only the water which is held on the surface of the grains in the form of a film which is available to plant roots. It is necessary to remove by drainage any surplus or free water which may occur. [On most Long Island soils nature has provided such excellent drainage that this is not important, but in other sections, the first requisite to success is a series of tile drains, laid parallel, two and a half rods apart and forty inches deep]. Proper drainage admits air to the lower levels of the soil and increases the depths of the roots, and insures the crop against drouth. In addition to this it enables the gardener to work his land immediately after a heavy rain and thus keep up with a growth of weeds, which thrive as well as cultivated plants under such favorable conditions.

The Organic Matter Sponge

NEXT to drainage, the most important factor in the control of soil moisture is the presence of large amounts of organic matter. Just as a sponge holds more water than a handful of gravel, so a soil well stored with humus holds more than any texture of soil which contains a less amount.

The intensive cultivation which a garden receives, permits rapid decay of this organic matter, and for this reason a garden soil does not long remain in the best condition of fertility unless large applications are made of stable manure, or some such cover crop as crimson clover or winter vetch. As the garden is often in use from earliest spring until

late in the fall, it seems impractical to raise any large amount of green manure, and for this reason gardeners always depend upon very heavy applications of stable manure to maintain the proper amount of organic matter in the soil. The presence of this organic matter in the soil increases the absorption of heat, by making it dark in color, and raises the temperature several degrees. The oxidation of this organic matter also produces a considerable amount of heat, which has been estimated as the equivalent of burning a ton of coal per acre a season.

The Garden Compost Pile

ONE of the most ready methods by which a gardener can add organic matter to his soil is by the use of a compost heap. Some old boards should be used to make a pen at least ten feet square in the corner of the garden, into which should be thrown all weeds and parts of vegetables which cannot be used in the kitchen. With this should be mixed at frequent intervals, a few shovelfuls of rich dirt from the garden. In a good sized garden there will accumulate, during the summer, several tons of material almost equal in value to purchased stable manure. If the weeds are pulled and thrown into this heap, the fermentation will destroy all the seeds and as many of them contain more plant food than the cultivated crops, the mixture will greatly increase the productivity of the garden.

As the soil is a poor conductor of heat, this organic matter also raises the temperature of fertile soil above that of a less fertile one. The increase of even a very few degrees of the temperature on the soil is highly desirable in an early spring, when it is difficult to get seeds to sprout, or transplanted vegetables to grow properly. A thorough cultivation of garden soil, combined with a large amount of organic matter, is important in maintaining a large supply of air in the soil. This air is necessary for the proper development of beneficial micro-organisms, and in preventing the accumulations of organic acids in the soil, which is often the result of imperfect decay of vegetation.

The Part of Chemicals

THE chemical factors of soil fertility are more readily controlled by the gardener than physical factors, in fact most people think that soil fertility consists wholly in the addition of large amounts of plant food to the soil. While this is not strictly true it is nevertheless a fact that if plants are to make the largest and economical growth they must have present much more plant food than is actually used; more than ninety-five per cent. of the plant is derived from air and water which are combined by the marvelous alchemy of the plant into such substance as plant fibre, starch, sugar, etc. The small amount of food derived from the soil first is, however, of the greatest importance in promoting the activities of the green leaf and unless all of the needed substances are present, the growth of the plant will entirely cease.

The most important element from the standpoint of the cost as well as from the probability of its being deficient, is nitrogen, which is used by most plants in the form of nitrates. Nitrates may be purchased in the form of nitrate of soda in which form the nitrogen costs about thirty cents a pound.

Unless nitrogen is present in the necessary quantity, growth is slow, the color of the plant is pale and the product unpalatable and stringy. If nitrate of soda is used it must be applied in small amounts at frequent intervals while growth is going on. Many gardeners dissolve nitrate of soda in water at the rate of a tablespoonful to the gallon which is quite strong enough to supply the needs of our plants.

A good quality of stable manure contains not more than ten pounds of nitrogen in a ton and this is in a rather slowly available form. When twenty or thirty tons of manure are applied per acre, each year, it will supply as much nitrogen as can possibly be used by the vegetables, but as so many horses have been replaced by motors, it is becoming increasingly difficult to secure large amounts of stable manure. A plot 100 x 40 ft. is almost one tenth of an acre, and two two-horse loads would suffice for a garden already in a state of good fertility. Three two-horse loads would be a heavy dressing,

Nitrogen is of particular importance in promoting the leaf and stem growth of plants, particularly cabbage, lettuce, and similar vegetables. Where the fruits or the seeds are the desired crops larger amounts of phosphoric acid must be used which may be applied in the form of acid phosphate, used at the rate of five hundred pounds to the acre.

Bone meal is a well and favorably known source of nitrogen and phosphoric acid, but as it is slow in its action, it is not well to depend upon it for crops grown the same season. It should always be used for crops like asparagus or rhubarb, which remain several years on the same ground.

Now that our usual sources of potash have been cut off, it is not possible for us to buy any considerable amount in the form of fertilizers.

Most of the potash in plants is contained in the stems and lower leaves which makes an added reason for saving unused portions of our vegetables as a compost.

Lime is needed on almost all garden soils, having an especially beneficial effect on beans, beets, and lettuce which are improved in yield and quality by moderate applications of lime. For convenience in applying, it is best to buy a hydrated lime in paper sacks. A half ton of this applied to an acre every second year will keep the soil in good condition.

Heavy fertilization and thorough tillage always result in a heavy loss of lime in the drainage water and the rapid decay of the organic matter in the soil leaves a residue of acids which must be neutralized if the land is to maintain its fertility.

The Part Played by Lime

THE effect of lime is as largely biological as it is chemical, and a fertile garden soil is an exceedingly lively place, swarming with untold millions of bacteria and other forms of micro-organisms, some of which are injurious, others beneficial, and others of no importance to us.

We do know, however, that the most fertile soils contain the largest numbers of bacteria, and we know enough of their effects to be sure that the production of nitrates, which are necessary to feed the plants, is entirely due to the activity of three separate groups of bacteria,

which only thrive in soil neutral in its reaction. It is, moreover, certain that the bacteria which enable the leguminous plants to use the nitrogen of the air thrive best in the presence of lime. It is known that there are found in many soils, organic products which inhibit plant growth, even when present in minute amounts, and that these products are not so often found in soils which contain a proper proportion of lime.

Present Time Opportunity

SINCE it is becoming increasingly difficult to secure stable manure in sufficient quantity it behooves the gardener to make the

most of his own resources which include the growing of green manures whenever the land is not busy with a saleable crop. After the middle of August certain parts of the garden are left bare while others will retain their crops until late in September or even October. Crimson clover is the most valuable of all the green crops and as the seed is cheap it should be sown on every square foot of available soil using not more than a half pound of seed to the square rod. As it is sometimes difficult to get crimson clover properly started in dry weather it is wise to put on the same land at the same time a seeding of rye which is the most reliable of all green cover crops. It has such a remarkable ability to start

growth in dry ground that it can be depended upon to grow when all else fails. [In the North October will be too late to sow any cover crop other than rye. Ed.] When the seed can be obtained it is well to use in addition to these a sprinkling of winter vetch as the three species together would make a larger and more useful growth than any one alone. Such a covering of green manure will be sufficient to add most of the nitrogen necessary for the next year's garden; will supply a quantity of organic matter sufficient to carry a crop through an additional two weeks of drought and will save from leaching out in the drainage water this winter as much plant food as is required for next season.

Using Fruits and Vegetables Wisely

CROPS HAVE BEEN GROWN, CANNED, AND STORED.—THEIR PROPER USE ON THE TABLE IS THE PRESENT PROBLEM OF THE PEOPLE IN ORDER TO REALIZE TO THE LIMIT THEIR POTENTIAL VALUE

[EDITOR'S NOTE: *This article, which has received the approval of the U. S. Food Administration, has been prepared by recognized authorities for the purpose of giving those who own gardens a realization of the great part they are able to take in the existent crisis. It is not the part of wisdom to endeavor to live without proper food at proper times, and in proper quantity. We have, however, been prone to eat without regard to any far-reaching influence because we lived in abundance and luxury. Now, with the need of all the peoples of the world pressing for our considerate attention, we must choose our food for the best interest of the whole world. The home gardener's patriotic duty is clearly laid down: He must utilize to the fullest extent the food materials easily at hand, so as to liberate elsewhere those other food materials that are more concentrated and more easily transported. And it is not a hardship—only learning to live up to opportunities.*]

IN THIS fall season, with plentiful fruits and vegetables surrounding us on every hand and with the fear before us of a scarcity of food in all lands, it is worth while to think whether we may not use more freely and more wisely these supplies that lie at our doors.

If we live in the country, fruits and vegetables are not only abundant but cheap and may often be had for the gathering; we who have our own gardens, need no inducement to use freely the material that we have planted, tended and watered through the long summer; those who live in a city apartment, and have had no garden to plant, and if the fruits and vegetables are so expensive as to seem almost like luxuries, still must use them if at all possible, both because they are good for them and because they may be made to take the place of some of the foods upon which we have been accustomed to depend. Even the many who, in this time of high prices, can only use the cheaper foods must still have at least the small amount of fruits and vegetables that are necessary for well-being.

Most of us have thought of the grapes or cantaloupe we eat for breakfast, or of the orange salad for lunch, or the apple compote for dinner largely as a matter of flavor, an additional gratification for the palate; we have used vegetables chiefly to give variety. We have, of course, known in a vague way that these foods are desirable from the standpoint of health, but how or why we have hardly cared to question.

To-day there has come an emergency. We are asked to eat wisely and well. We are asked to change some of our food habits. Among other things we are asked as far as possible to make use of the "perishables" that nothing may be lost. If we are to do this in the right way and make these take the place of some of our usual foods, we not only must know their real food value but we must know as well the fundamental needs of the body and how these are supplied by the different foods. Only then are we ready to use in place of part

of our meat, our cereals, and our sugar, these foods that are difficult to transport, when transportation is needed for other purposes, and that may play an important part in the present situation because they set free some of the staple foods for the use of our Allies, for the use of our own people who are living on a minimum amount, and for our soldiers. In ordinary times we may "muddle along" in our well-to-do fashion, with the comfortable assurance that if we are using an ordinary mixed diet we are probably getting what we need. To-day we must know; we may no longer guess.

WE ALL know in a general way that our food furnishes material to build the body and to repair the waste that is constantly going on as a part of the life process; that it furnishes fuel, which yields heat and gives the energy not only for the work that we do but also for the internal work of the body—such as the beating of the heart. We have only lately begun to understand that this is only part of the story, and that the food furnishes also certain things that we may call regulating substances.

Some of these are the mineral salts that also act as building material, some are acids such as add flavor and refreshment to our fruits, and some are the newly discovered substances, as yet unnamed, whose nature is unknown, but which seem necessary to health and growth. These have sometimes been called "vitamines" and are sometimes spoken of simply as "fat soluble" and "water soluble" substances. The fat soluble substance is found in milk fat, in egg yolk, in meat fat, and in the green leaves of plants. This seems to be especially necessary for children since growth does not take place without it. The water soluble substance is more widely distributed and is found in fruits and root vegetables and in some amount in most of our common foods except fats, cereals that have had the outer coating removed, and such foods as sugar and commercial starch.

"Food" or "Fuel" Values?

OUR FRUITS and vegetables, with a few exceptions, have only a small amount of that indispensable kind of building material found in meat, milk, eggs, and grains, called by that much shunned name protein. Only a few of them can furnish much fuel in the form of starch, and still fewer offer it in the form of fat. All ripe fruits and many vegetables contain sugar. But it is especially because of the abundance of mineral matter such as iron and lime salts, and of the regulating and growth-promoting substances, that we need always include at least some of these foods in our diet. They furnish, too, some of the indigestible matter that we may call roughage and that must be provided to give enough bulk to our diet. The fruits are nearly all somewhat laxative, due not only to the roughage but to the mineral matter and acid present. They are a good supplement to cereals, meat, and eggs. Most of the vegetables and fruits, even acid fruits, such as oranges and lemons, after they are utilized in the body are no longer acid but alkaline.

WE FIND all the time different estimates of the food value of fruits and vegetables. One picks up a paper and finds that cabbage, for example, has "very little food value" and is an extravagant addition to the diet. Some else will say that the same food is exceedingly desirable. The truth depends upon our interpretation of "food value." If we mean by this the fuel value of the food, i. e., if we mean that the food will produce a large amount of heat or power to work, in other words, that it has a high energy value, we must agree that very few of our fruits and vegetables have a high food value. Perhaps we might better say that they have a high value as food.

A Word to the Cook

SINCE we use our vegetables largely for their mineral salts, we should see that in the process of cooking this mineral matter is kept and not thrown away. Steaming the

vegetable, or, if it is cooked in water, using so little water that it may be served with it, or saving the water for the making of cream vegetable soups, are all ways of doing this. It is stupid to choose vegetables for our diet because of their one special value, and then throw away much of the material that gives them that value. Delicious soups may be made from the water in which cabbage, cauliflower, asparagus, peas, corn, spinach and other vegetables have been cooked.

In trimming celery for salad the leaf and the tougher stalks may be laid aside to dry. The tougher leaves of the spinach may also be dried. Part of the bunch of parsley or mint, onion or carrot, that is not used, even the peeling and tough stems of mushrooms, may be dried, and all of these may be used for soup or flavoring.

For drying these small amounts no special apparatus is necessary. A tin plate kept on top of the gas oven, or in some place near the stove where it will get a small amount of heat, is all that is needed. In the same way, if an ear or two of corn is left from the dinner, it may be cut from the cob and dried and used another time for a vegetable or for soup. "Dry as you go" might be the motto for this method of saving.

EMERGENCY USE

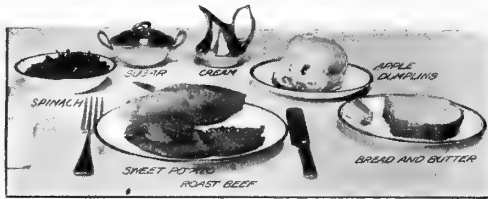
To-day the question arises how far can we use these fruits and vegetables not merely for their own value but to take the place of other foods. We can use them safely in large amounts if in this generous use we do not neglect the fuel and body building foods, and if we choose them carefully we may use them as meat savers, cereal savers, and sugar savers.

Fruits and Vegetables as Meat Savers

MEAT is one of the foods upon which we are accustomed to depend for much of our body-building material. The best vegetables to take its place are peas (including the cow pea so common in the South) and shelled beans, such as kidney, lima, and soy beans. These have a fair amount of this body-building material that is so essential not only to our welfare but to our very existence. This protein is not of quite the same kind that is present in milk, eggs and meat, so that it may be used only to supply part of the whole amount we need. It is better then to think of these vegetables as meat savers rather than as meat substitutes, but the addition of a very little meat, or milk—even skimmed milk—or egg is all that is necessary to supply the lack. One half a pound of shelled green peas or beans, or one fourth of a pound (one cup) with a cup of skimmed milk or an egg, gives as much body-building material as one fourth of a pound of beef.

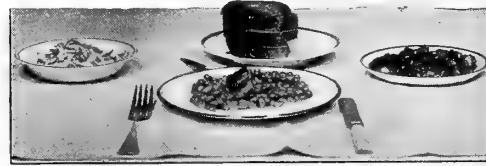
Other vegetables may be used to extend the meat flavor and to make it go as far as possible. Many of us eat too much meat. If we can eat

less and yet have the flavor that we like we shall be better off and just as happy. If we are accustomed to use only a little meat, it is all the more necessary that we should get all the satisfaction possible out of it. In our stews we might use one fourth as much meat as we have been accustomed to use, and double or triple the amount of vegetables. A satisfactory dinner may be made from a very little left-over meat, put into a casserole or covered



A well chosen dinner, giving the right proportion of muscle-building food, with enough starch, sugar and fat to give the needed fuel. The spinach contains iron and other mineral matter, and some of the other foods contain the regulating substances so necessary to health and growth.

The dinner on right is less expensive, but it is as well

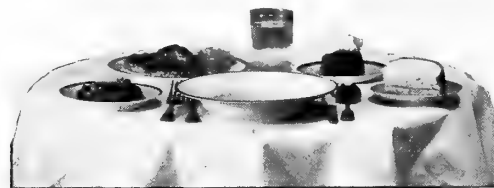


selected. Most of the protein is supplied by the bread, since the cereals are the cheapest source of this muscle building food, and by the baked beans, that like all the legumes contain a very large proportion of it. Even the least expensive diet must have some fresh vegetables or fruit. Here cabbage is chosen

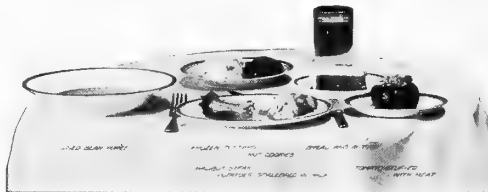
dish between thick layers of sliced carrots or turnips, with a little water and seasoning added and perhaps a little left-over gravy, or broth, and the whole cooked in the oven until the vegetables are thoroughly done. The New England "boiled dinner," with its many vegetables and its small amount of meat, is an old method of carrying out this plan.

Cereal Saving—Potatoes

THAT our present need is to save our cereals, especially wheat, no one questions, and for this we must look chiefly to the potato and the sweet potato, among vegetables;

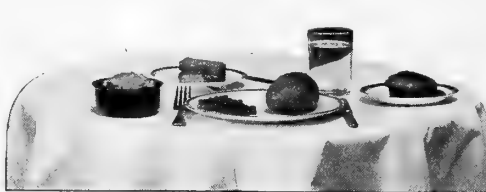


This dinner looks attractive, but when we study it we find that too many of the foods that are used in it are chosen from the group that contains a large amount of fat. The dinner consists of cream of tomato soup, mutton chops, creamed potatoes, greens cooked with bacon or pork, and suet pudding with hard sauce. It contains over 3 ounces of fat; 1½ to 3 ounces is all that should be used for the whole day



This dinner has too much of the muscle-building food called protein. Fish, eggs, nuts and beans each may be used to take the place of some of the meat in the diet. Here we have them all, with meat besides.

The dinner shown to the right has too many foods from



the two groups that are rich in sugar and starch. Meat pie and baked potato, green peas, bread and butter, and cottage pudding with chocolate sauce, in one meal show how by unwise choice, one characteristic of the well-chosen diet—a right proportion between protein and fuel—was omitted

among fruits we may use the partially ripened, cooked banana.

The potato, not only in common usage but from a dietetic standpoint, is in a class by itself among vegetables. One may live entirely upon the potato, as some Danish investigators have done for several years.

Five ounces of potato yields as much fuel value as one ounce of cereal, uncooked, but since in cooking the cereal we add from 2 to 3 times the amount of water, we must serve about twice as much potato as cereal to give equal food value. A small potato (4 or 5 to the pound) has as much starch as a large slice of

bread (1 oz.), though it contains a little less of the body-building protein. Now that potatoes are again abundant we may eat less bread and use more potato. In America the average consumption of potato is about one-half pound per day for each person, and this might be materially increased. The potato should be cooked in its "jacket," for much is wasted in paring and the pared potato loses more of its mineral salts in the water than the unpared.

Fruits as Sugar Savers

FOR saving of sugar we depend chiefly on fruits rather than on vegetables, though beets, carrots, parsnips, artichokes, and especially the sweet potato, contain a good deal of sugar; while onions, cabbage, some kinds of peas, string beans, sweet corn and

squash also contain a fair amount of sugar.

We sometimes divide our fruits into flavor fruits and food fruits, but the dividing line between these is very indefinite. Bananas would naturally fall into the food class since the banana contains a large amount of real food in the form of starch—or sugar in the ripened banana. Oranges and peaches, on the other hand, belong to the flavor fruits, with less than half as much fuel value as the banana. Grapes, with their large amount of sugar, plums, and cherries come in between. We need to remember this in planning our bill of fare. Dried fruits—dates, figs, raisins, prunes—have so much sugar that they may well be used in place of candies.

While the raw fruits to many are the most attractive, some find them more difficult to digest than the cooked fruit. While we may use cooked fruits in combination with cereals and in other ways for puddings and desserts, some of the simplest ways of cooking them are quite as satisfactory. The apple sauce made from cooking the whole apple, skin and all, and straining it, uses every particle of the flavor and the mineral salts present. Pears baked for three or four hours in a deep dish, with a very little water, either with or without a

small amount of sugar, turn such a beautiful red that they are a delight to the eye as well as the palate. Baked quinces prepared in the same way, either with or without the addition of apple, is a use of the fruit that might be more often made. Prunes may be cooked without sugar, and to

many are much more palatable. If the prunes are soaked over night, and cooked in the water in which they were soaked until the water is reduced to a thick syrup, one has an article little like the ordinary stewed prune.

Jams in Place of Butter

JAMS and preserves, through the addition of sugar, are foods of a high fuel value.

Jam is regarded as of great importance on the Continent of Europe to-day and all the Continental governments have taken steps to procure sufficient jam in order to cover this need in the diet.

"Bog" Gardening With Native Plants

By NORMAN TAYLOR Curator of Plants
Brooklyn Botanic Garden

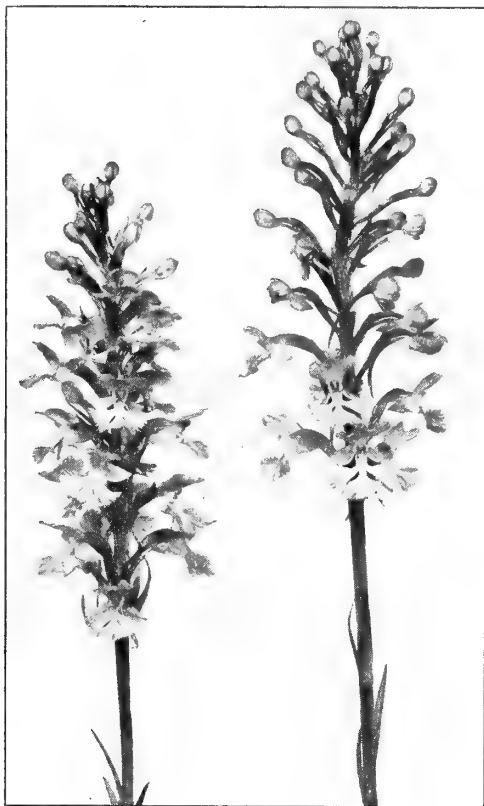
A PRACTICAL SOLUTION OF UTILIZING A WET HOLE THAT IS OFTEN A TROUBLESOME SPOT—CHARMING NATIVE PLANTS THAT DELIGHT IN SOUR, UNDRAINED SOILS

THE reason for having a bog garden is that in it may be grown many very interesting plants that cannot be grown in any other situation; and, besides, many ordinary swamp plants can also be grown along its edges.

There must be a clear distinction made between bogs and other wet or swampy places before bog gardening can be a success. In the marsh or swamp the drainage is usually fairly regular and free; in the true bog the drainage is practically nil, or only free during the spring thaw. Because of this lack of drainage there is in all bogs an accumulation of acidity in the bog-water, which is strongly acid and dark colored in some glacial potholes, more moderately so in some of the partly drained bogs of the coastal plain regions of the country. There is usually, but not always, a deficiency of lime in bog soils, and in nature there is a very large percentage of mycorrhizal plants found in them. The relation of the mycorrhizal habit of getting food and the acidity of the bog is a very delicate and complex one and little is actually known of it. But experience has shown such a relation to exist.

Making an Artificial Bog

IF YOU have an undrained or a poorly drained area about your garden the problem of having a bog garden almost solves itself. But the demands of others who wish to grow the many beautiful species that will only become naturalized in such places, has led to the construction of artificial bogs. These may be of any size from a few square feet to comparatively large areas, and methods of construction must vary according to the nature of the subsoil. In places where there is a layer of hard-pan and the downward drainage is poor, it will only be necessary to dig out the



Fringed Orchid (*Habenaria*) one of the most showy native plants that can be cultivated only in a bog

desired amount, fill in enough blue clay to make the basin water tight and then put in the mixture to be described presently.

A more permanent and satisfactory type

of construction is to make the basin of concrete, the walls and floor of which should not be less than six to eight inches thick, to prevent the concrete from cracking during frost. Waterproof the concrete, and because in all concrete mixture there is lime, it is best to smear clay over the walls and bottom. The completed bog, whether of concrete or merely scooped out of the ground, should be two feet deep, its edges practically flush with the surrounding ground. If of concrete, sods will easily grow over it and the hard line of the rim may thus be completely hidden. Be sure before filling with the mixture that the tank is watertight, just as though it were for a Lily pond. The shape of the structure, whichever type of construction is used, must be a matter of individual taste. While informality is the essence of bog gardening a "regular irregularity" is most to be fought against. Ten minutes' observation of natural bogs, their shapes and shore lines will put the imaginative bog gardener in possession of all the suggestions needed, to prevent putting impossible bog gardens in impossible places. As a cardinal feature remember that the drainage from the surrounding region should be all in, not out.

The management of the bog garden requires some skill and observation. As the amount of evaporation from the surface is enormous, water must be added, either artificially or naturally. Strive to keep the bog just full enough not to overflow, thus keeping the whole sponge wet, but preventing the leaking out of the valuable acids that are the life of the bog. Both for the effect and for the good of the bog it is desirable to cover all the open spaces in it with live sphagnum moss, which when once established, will make a delightful carpet.



The "bog" at the Brooklyn Botanic Garden, was shipped from the New Jersey pine barrens and placed in a prepared basin of concrete lined with clay. Anything that came up was allowed to grow, and any undesired plants were not retained. Others are added from time to time



The Sundew (*Drosera intermedia*) an insectivorous plant which traps flies, etc., with its glandular hairs

Making a Bogplant Soil

THE mixture to go in the bog garden is preferably one that has come out of a Cranberry or natural bog—muck, twigs, water, slime and all. From such a mixture a host of very interesting bog plants will spring up the first year and these may be isolated in clumps after the first season. A good plan when following this procedure is to let the inner part of the bog "run wild," clearing a strip of a foot or two all round the edges, for the cultivation of species needing, for exhibition purposes, more open spaces. Provision should be made, either in this strip or in any other open place in the bog for two things. (1) A place where only sand and peat soil, mixed about half and half, is found, to be used for certain plants that are described in the lists following: and, (2) some small space of practically open water where the very interesting Bladder-worts may be grown. The latter situation can be made by scooping out the muck for a few inches, filling in with sand and peat soil, leaving about five to six inches depth of water.

For those who cannot get muck from natural



The Pitcher plant catches insects in the leaf-like pitchers and feeds on them. Plant shown in bloom

bogs a soil can be mixed of leafmold, sand, and twigs and leaves of the Oaks or of Mountain Laurel or Rhododendron refuse. Guard against getting the mixture too heavy and clayey. Sand and plenty of twigs and leaves of the species mentioned will lighten up the mixture—leafmold makes it more heavy.

Plants For the Bog Garden

MANY bog plants are very showy and worth cultivation because of this. Others, such as the insectivorous kinds, are among the most wonderful plants in nature, for they have the unique distinction of being able to digest animal matter directly, a habit otherwise unknown in all the realm of vegetable life. The devices for catching and keeping unwary insects are ingenious beyond the imagination of most of us. Darwin's "Insectivorous Plants" is more fascinating than any fairy tale.

Many bog plants are necessarily omitted from the following list, and it should be remembered that a number of purely swamp species, not mentioned here, can also be grown in bogs. The delight of a bog garden lies in the fact that many, very many, of the bog plants may be collected in the wild and transplanted. For those who cannot collect there are dealers who specialize in water plants.

SHRUBS FOR BACKGROUND EFFECTS

Rhodora (*Rhododendron canadense*), purple flowers before the leaves in April and May, 3 to 5 ft.

Swamp Azalea (*Azalea viscosa*) white or pink flowers after the leaves in May or June, 5 to 8 ft.

Sheep Laurel (*Kalmia angustifolia*), purplish-pink flowers, summer, 1 to 2 ft. Also *Kalmia glauca* in northern regions.

Leather Leaf (*Chamaedaphne calyculata*), small whitish flowers along one side of the branches, May, 1 to 2 ft.

Labrador Tea (*Ledum latifolium*), white flowers in terminal clusters; leaves russet-brown below, 2 to 5 ft.

Wild Rosemary (*Andromeda polifolia*), drooping white flowers, early spring, leaves silvery below. Under 2½ ft.

Creeping Snowberry (*Chiogenes hispidula*), prostrate, with tiny white flowers and snow berries. Leaves dark, evergreen.

There are many others but those named are the best for the temperate regions of the United States. In the South many others are to be found.

PERENNIALS, GROWN CHIEFLY FOR THEIR FLOWERS IN ANY OPEN PART OF THE BOG

Water Arum (*Calla palustris*), a greenish-flowered plant, having a conspicuous white spathe. Showy and hardy.

Calamus (*Acorus calamus*) sword-shaped leaves and a fingerlike flower cluster; the root is the medicinal calamus.

Violet (*Viola lanceolata*), a delicate, very free flowering violet with lance shaped leaves.

Milkweed (*Asclepias lanceolata*), a deep red milkweed, very showy, and with smooth, narrow leaves.

Purple Marshlocks (*Potentilla palustris*), a sprawling, rather rank bog plant with purple flowers.

Ditch Stonecrop (*Penthorum sedoides*), greenish-yellow flowers in curved spikes, summer.

Golden Club (*Orontium aquaticum*), very early flowering, and making a patch of gold in March, or April.



Several species of Closed Gentian can be grown only in the bog garden

Buckbean (*Menyanthes trifoliata*), with three-divided leaves and many conspicuous white flowers is a valuable addition.

Swamp Pink (*Helonias bullata*), flowering in April to May, is our most conspicuous spring bog flower.

There are many Asters, Goldenrods, and Eupatoriums that grow in bogs, as well as some Gentians, but the bog species must be collected from the wild.

IN WET, SANDY PLACES

Here must be grown all the species of Yellow-eyed grass (*Xyris*), curious plants with long, delicate, grasslike leaves and tiny heads of yellow flowers.

Also species of Bunch-flowers (*Eriocaulon*) should be grown here.

They are not large, have sword-shaped leaves and white, erect heads not unlike the everlastings.

With these too, must go the Meadow Beauty (different species of *Rhexia*). Beautiful purplish-red flowers.

All the plants in this class and the following are to be had from dealers in bog plants or collected in the wild. There are others such as *Lophiola*, *Abama*, and *Zyadenus*.



Ladies' Tresses, a bog Orchid of slender habit, flowers white

IN OPEN WATER

The Bladder-worts are different species of *Utricularia*, some with purple and some with yellow flowers, some floating on the surface and supported by air-bladders, others rooting near the edges of the pool.



The purple Calopogon, one of the most beautiful native bog orchids

The most interesting and delicate of all bog species.

BOG ORCHIDS

Many native Orchids can only be grown in bogs, and from them the following have been selected as the most noteworthy. All are perennials and may be had from the dealers.

Calopogon pulchellus, pink-purple flowers about an inch in diameter, June and July. Leaves grass-like.

Cypripedium parviflorum, a small flowered yellow Lady's-slipper. Raise up so roots are not too wet.

Cypripedium spectabile, showy Lady's-slipper; beautiful rose-purple or nearly white flowers.

Habenaria blephariglottis, a white-fringed Orchid with a showy spike, 1 to 2 ft.

Habenaria ciliaris, yellow-fringed Orchid, very showy spike, 12 to 18 in.

Arethusa bulbosa, beautiful purplish pink flowers, about the last of May, 3 to 6 in.

Spiranthes cernua, white, slender spikes. The Ladies-tresses. Several others, even more slender species are known, but must be collected.

Besides these there are more than forty other species which may be collected by the enthusiast. Nearly all of our most beautiful native orchids are bog plants.

INSECTIVOROUS PLANTS

These will be grown more for their peculiar habits of getting their food and for their odd form than for their beauty. They are of several types; some catch insects in a tube-shaped leaf, drowning them at the bottom of the cup, others have sticky hair to which the insect becomes fastened, and the most wonderful of all, Venus' fly-trap, actually traps its food by a contraction of its jaw-like, prickly leaves. The best insectivorous bog plants are as follows:

WITH PITCHERS: *Sarracenia purpurea*, having short purplish red pitchers, quite hardy northward, our common northern pitcher plant. *Sarracenia rubra*, the red trumpet



The Sheep Laurel, with showy pink and purple flowers in summer, is a useful bog shrub

leaf with tall pitchers. *Sarracenia flava*, also with tall pitchers but yellow. *Sarracenia Drummondii*, with variegated pitchers, the largest and most showy of all. The last three must be taken in during the winter north of Washington, D. C. All are much more showy than the first.

WITH STICKY HAIRS: All the species of *Drosera*, or Sundews, have the curious habit of catching and digesting insects. They are all small plants which should be planted in masses on sphagnum moss. All are quite hardy.

WITH CONTRACTING LEAVES: The Venus fly-trap, a low perennial with two valvelike leaves that contract whenever an insect or other irritation comes between them. Closing up rather rapidly, they are among the most interesting plants to have growing in the bog garden. Not hardy north of Washington, D. C.



The showy Yellow Fringed Orchid is common in many wild bogs

One Successful "War Garden" Effort

THE WORKINGS OF AN ACTUAL CASE TAKEN AS TYPICAL IN LAYING PLANS FOR THE FUTURE ON THE LESSONS OF THE PAST

WHEN the electrifying "appeal" came in late spring the response to the President was whole souled and universal. Wonderful gardens blossomed where hitherto tin cans and weeds abounded. Literally the waste lands were made fruitful. All this, of course, is now history. We saw with our own eyes, you and I, and we marveled greatly that there was so much latent garden spirit needing only the proper stimulus. In large cities like New York and Philadelphia municipal demonstration gardens were planted in the public parks. Boston appointed a special home garden expert. East and west, north and south, gardens were started. The garden clubs turned from "pleasure" gardening to "profit" gardening and lent a hand in starting local action. The boy scouts were enlisted.

Much credit is due the various local communities that took definite action quickly and produced results this year. In some places the final results were not entirely successful, but those communities may learn from the others so that next year's efforts will count on the right side. One of the decidedly successful

centres may be taken as typical. Islip, on Long Island, is selected because it seems to illustrate the practical application of certain lines of action which brought good results.

In April three ladies as representatives of the Islip Women's Suffrage Club, Mrs. Jay F. Carlisle, Mrs. August Belmont, Jr., and Miss Mary Smith, started the home garden movement. Whatever they may have lacked in gardening experience was more than offset by keen interest and close application, resulting in one of the strikingly successful garden ventures of its kind in all the country. At the outset the active coöperation of a skilled gardener was engaged and he gave advice and supervision all through the season. Home gardens were encouraged where the space was available; if not, free garden plots were given to those who had no opportunity at home. In all, about 150 gardens were started and planting charts supplied as guides—these were not ironclad, however, and were subject to variation.

The gardens were divided into four classes, girls, boys, women unaided, and family gardens—four prizes were offered in each class.

The children were given gardens of a uniform size 15 x 25 ft., but were not confined to these dimensions, for a youngster could get more ground and felt able to do more according to his or her size or ability, he was encouraged to do more, but all were cautioned against starting too large a garden and were told very plainly that a garden 15 x 25 ft. well cared for was better far than 30 x 50 ft. only half cared for.

Owners were notified that their gardens would be visited frequently; that the best gardens would be photographed. The coöperation of the "Movie Palace" was here sought and notice given that lantern slides of the prize winners would be shown at the time of awarding the prizes. This had a wonderfully stimulating effect on the younger element, any one of whom would gladly have given almost anything he possessed for the honor of having his garden flashed on the screen as a winner.

Before any actual work was started a lecture (illustrated with lantern slides) was given. This was to teach the beginners the rudiments of gardening, showing *how* to do the various tasks; but above all why to do them. Such

matters were discussed as, why lime is applied to gardens, the value of manure as a plant food, the place of fertilizers, the purpose of digging, how to make drills, why the soil is cultivated, advantages and disadvantages of artificial watering, tools required and the way to use them. The course in fact was a beginner's A. B. C. of gardening from the digging of the ground to the storing of the crops.

The organizers, working on the theory that anything had for nothing was held too cheaply, agreed to furnish all seeds, fertilizers, and other requisites at cost, and to meet the cases of those who could not afford the expenditure at seeding time arrangements were made for payment when the crops were gathered, or by installments if so desired. This proved a real incentive, better than scattering a quantity of free seed, and then visiting the garden in fall and finding only the garden wreck hidden by a tall monument of weeds; for those who didn't pay cash for their seeds felt that some one had a mortgage on their garden and they were trying hard to lift it and with few exceptions they did.

Home gardens were preferred to community centre gardens for several reasons, firstly, the garden at home was more convenient for the owners to cultivate; secondly, where a number of gardens are closely connected the owners of the poorer gardens get discouraged and give up; thirdly, an hour per day in the garden is vastly superior to one day a week; fourthly, the produce of a garden away from home is liable to waste because of the inconvenience; fifthly, considerable time is wasted in garden centres where the children predominate unless some one is there to look after them.

It was the duty of the instructor to frequently inspect the various gardens, giving lessons to the children on any problem that came up, including such questions as these: What can I do to get rid of ants that destroy my seed? How far apart must I thin my beets? What shall I sow after the early peas and spinach? This idea worked splendidly, it kept up the interest,

because the youngsters felt that they were actually learning something.

The one great stumbling block in teaching children gardening (or anything else for that matter) is to get them to take things seriously and it was thought best to be frank with them at the start, insisting that gardening meant hard work, that successful crops were the result of hard work and plenty of it. This course frightened off a number who wouldn't have

or more a day (or seem to at least) is the critical time in the beginner's garden. Here the big part played by the principal had its effect; frequent visits being made to the gardens, and a word of encouragement here, or a suggestion there, kept many a half inclined slacker close up to the firing line. Any garden enthusiast would have found something worth while in a visit to these gardens during the summer, the originality of ideas displayed showed initiative. A dozen different types of tomato trellis were found and all had good sound common sense back of them; one garden was neatly hedged with carrots and parsley—practical, sensible and pleasing; in another lima beans and corn were sown in the same hill with the idea of using the corn to support the beans; still another garden was the work of a lad who had but one arm, but he hadn't asked for any handicap and he started from scratch along with the others.

Just think what these gardens meant in this one little community alone! More than 150 plots that had never been planted before, the yield—even though these gardens didn't have anything in quantity that Uncle Sam might send across the water, yet they did have plenty for the families of the youthful gardeners—which released an equivalent amount for shipment abroad.

One of the hardest points to teach was gathering the vegetables when ready. This matter can only be handled properly by frequent visits to the gardens; there must be persuasion. The youngsters had the idea that the garden was to grow vegetables and that when the vegetables were gathered their gardens suffered somewhat. This, of course, is true as far as appearance is concerned, but not from an economic viewpoint. It took no little effort to convince the youthful gardeners that their peas or beans should be picked.

To sum up this success can be attributed to the following reasons, placed according to their importance: close application of the organizers; frequent inspection of the gardens; frequent and timely advice by some one who knows.



Beans are always satisfying for beginners, for they are not exacting in soil requirements and yield good crops

taken the matter seriously, and so would have given up their gardens at the critical time. Some garden organizers in other sections worked on a different theory, painting the bright side very rosily and thought much had been accomplished by getting a very large number to start irrespective of the chances for a successful conclusion.

Unquestionably one of the greatest obstacles to surmount was the tendency to abandon the gardens during midsummer. Any one can garden during May and June when nature smiles her sweetest, but in July and August, when the sun is strong, when the mosquitoes are thick, when the swimming is fine, and when the pesky weeds grow a foot



This was one of the really successful gardens, neatly ordered and well cared for throughout the season



A back yard that in former years was a rubbish heap literally covered with empty paint cans

THE PATRIOTIC GARDEN

He also Fights who helps

a Fighter Fight - - (H-Hoover)

AT LEAST SAVE SOME OF YOUR WINTER SUPPLY

MAKE YOUR GROUND WORK FOR THE FAMILY & NATION

Message from the Food Administration

THE GARDEN owners of America have it in their power to produce food for themselves and for others, so that the millions of people who face hunger next year can be largely relieved by them. Food raised in American gardens for home consumption next year will enable the organized mercantile interests of the country to build up reserves in supplies to meet these demands from abroad. If the housekeepers and the gardeners work together, we can feed our own army better in France.

The home makers in America can grow food that will serve as ammunition and help us win this war. The result of this year's crops is now being preserved in many ways and placed in our cellars and storehouses. With proper care, we have enough of a supply to carry us through the winter, but next spring the campaign will open again.

In spite of the fact that here and there has been inadequate use of supplies grown, on the whole, the general increase in garden supplies has been of great significance. Next year it must be

more significant and even more intelligently planned, as to planting, as to harvesting, as to marketing, preserving and storing.

At this time, when savings of all sorts are necessary in order to pay for the war, we must try to choose the food crops that are most productive, most economical and most worth while for each individual home and table.

The seed supply of next year must be carefully conserved. Those who can should save their own seed from their own gardens. Every one who takes care of himself in this particular affords some relief to the general strain.

By concerted action in production and in conserving, we can not only support ourselves well, but care for our own army and for the women and children of those lands abroad which have been devastated by war.

Patriotism can be most effectively shown by non-combatants by contributing to their own support and that of others.

U. S. FOOD ADMINISTRATION

Gardens Add \$100,000,000 to Nation's Wealth O. R. GEYER New York

A BROAD REVIEW OF THE COUNTRY-WIDE SPIRIT IN HOME GARDENS—WHAT "WAR GARDENS" REALLY MEAN

EMERGENCIES which have never arisen before in the history of the country, or in the world for that matter, have given an impetus to the "back-to-the-soil" movement in the cities and towns of the nation which will have an important effect in breaking down the German submarine blockade and staving off threatened famine. Of necessity the little back yard garden, which has been ignored by a

majority of the busy world, has been placed upon a pedestal where it promises to stay.

When the call to arms came this spring the army of home gardeners gained several million recruits, due to one of the most remarkable drives for increased food production in the history of the world. Innumerable old rusty hoes and rakes were brought out with the first days of warm weather, and as a result America will be approximately \$100,000,000 richer this

fall, according to estimates made by experts in the Department of Agriculture.

Hundreds of thousands of acres of idle ground located in the cities and towns of the country have served a useful purpose this summer which will be felt the world around. At no time in history has it ever been recorded that such recognition has been given the back yard garden and the humble commuter and his small town cousin will have found themselves



Many fine lawns of country estates were pressed into service this year and turned into productive areas. These two "before and after" views of the lawn of Mr. G. C. Eastman, Rochester, N. Y. are but typical of what was the almost universal practice. Grass succumbed to potatoes

valuable factors in winning America's greatest war. Incidentally, as he lays down his hoe at the close of the season, the back yard gardener is finding out why it is that America is the most wasteful nation on the face of the earth. This discovery is going to have its effect in giving stability to the "back-to-the-garden" movement brought on by the necessities of the times, and for this America may be truly thankful, even if the war does nothing else in a constructive way.

This conversion of the American people into first rate gardeners may be said to be one of the few blessings the world war will bring to America. Experts estimate that if the war does nothing else for the average American family but to show it how to become self supporting during the spring and summer months through its own back yard it will have paid off \$7,000,000,000 of the war credit within the next fifty years. Putting it differently, America has been losing more than \$100,000,000 annually because of its failure to interest its citizens in intensive gardening like that which has been practised in Europe for generations.

The present boom in gardening promises to make history as well as to cut the cost of living for the average family. Surveys made several years ago in a number of large Western cities opened the eyes of many persons to the importance of the home garden movement as never before. In one city, Kansas City, Missouri, it was discovered that more than 20,000 acres of vacant lots were lying idle each summer when they might be converted into profitable gardens through the expenditure of a little time and money. Added to this were about 10,000 acres of back yards capable of supporting home gardens but which were allowed to lie unused.

It was demonstrated conclusively that this waste land was sufficient to feed the population of the city during the summer months, providing its citizens cared to go to the trouble of making use of the vacant lots and idle back yards. One can well imagine the results that would be brought about in the half hearted fight against the high cost of living if the city could be aroused to the need of cultivating and making use of these ideal garden plots. For one thing, it would release an equal number of acres of land used to grow garden produce for the city in the outlying country districts and in other sections of the country. Being self-supporting, Kansas City would not require long trains of freight cars to deliver its vegetables and fresh fruits during the summer months. Therefore, these idle freight cars and railroad equipment could be used in hauling other products suffering because of the congestion of traffic.

What was true of Kansas City a few years ago has been true of almost every city in the country, with very few exceptions. This accounts for the tremendous drive for increased garden acreages made by hundreds of American municipalities. By this drive many thousands of badly needed freight cars will be released for important duties other than the feeding of the population of the large cities. These freight cars can be used advantageously in transporting war munitions and supplies, supporting the boys in khaki. It is in this manner that the garden movement promises to make itself felt around the world, for every week that America can save in equipping and transporting its expeditionary force to Europe will in proportion reduce the length of the war. Not only does gardening promise to hasten the end of the war, but it releases for foreign consumption thousands of tons of foods badly

needed in other countries to avoid famine. For this and other reasons the average back yard gardener may well puff out his cheeks and strut with pride—he is a valuable cog in the world's greatest war machine.

One of the most remarkable garden drives in the entire country has been in Des Moines, where a city of 100,000 was turned topsyturvy in the interest of the movement to make the city self-supporting during the summer months. The city commissioners began their preparations for the garden drive weeks before the weather forecasters began to predict the arrival of spring. For one thing the city employed a high salaried garden expert to take charge of the municipal garden movement. During the spring and summer months, at least, this office shadowed in importance all other municipal offices.

The weeks that followed the employment of the garden supervisor were electric with garden news. Huge quantities of free garden seeds were obtained through congressmen and by purchases made under the authority of the city. These were given out without charge to any applicant who would promise to plant and cultivate a vacant lot or back yard garden, no matter how small. The call for free seeds was so great that the supply was exhausted several times, but the city faithfully made good its word and saw to it that every gardener who wanted them got his free seeds.

The next movement was the making of a survey of the vacant lots and idle plots of ground in the city limits. Thousands of these unused lots, the majority of which had been pre-empted for dumping grounds or had been allowed to grow up in weeds, were found before the survey was concluded. Arrangements were made to utilize these vacant lots, rent free, for gardening purposes, and the city saw to it that every applicant for garden space was supplied with a vacant lot located as near his home as possible. Before it was time for the first seeds to be into the ground 2,000 of these vacant lots had been claimed and were being cleared of trash and debris by ambitious gardeners. The city commissioners then drafted an ordinance which made it possible to seize and cultivate every vacant lot in the city not put to some useful purpose. The garden supervisor was instructed to seize and put under cultivation all vacant lots and unused property on which weeds were found growing. This added several hundred lots to the city's garden acreage, as idle property owned by so called slackers was drafted for public service. The owner did not share in the profits accruing from the utilization of his property in such cases, for he was allowed no rent.

The protecting hand of municipal authority was extended still further when the commissioners passed an ordinance, or rescued an old statute, making it possible for gardeners harassed by their neighbors' poultry or live stock to make short shift of any offenders caught destroying garden property. Persons who had been in the habit of making short cuts through vacant lots found the law's stern hand pointing out the sidewalk for them, garden property of this sort being inviolate.

Estimates made early in the season indicated that a total of nearly 5,000 new gardens had been added to the cultivated area within the city limits as the result of the agitation for a greater interest in gardening. What is true of Des Moines is true of a hundred other of the larger cities of the country, so that one may readily understand the dollars and cents value of the "back-to-the-garden" movement in America.

In hundreds of localities school children were dismissed from school days and even weeks earlier than the close of the school year in order that the boys and girls might help in planting gardens. Boy scouts and girl scouts were drafted for garden work in hundreds of communities, although it must be said to their credit that drafting in the strict sense of the word was unnecessary. Not only did the schools and municipalities take an active part in launching the garden movement, but thousands of corporations and business houses became aggressive advocates of the garden movement. Almost every railroad of importance had opened its right of way for the cultivation of garden and farm crops by early spring, releasing many thousands of acres of idle land for this useful purpose. Almost all these railroads encouraged their employees to plant gardens on this or other idle railroad property, with the result that thousands of families who otherwise would have been without the ground needed for a home garden were supplied with all the ground they could possibly take care of. In many instances free seeds were supplied to needy employees.

What the railroads have done for their employees they have done for the general public in an even larger measure. With few exceptions all the great western railroad systems have opened their right of way property to the cultivation of farm and garden crops. For the most part no charge is made for this ground, although one railroad does charge \$5 for each lease, no matter how large. This road has thousands of acres of alfalfa planted along its right of way. Near every large city hundreds of garden plots may be found on railroad property of this sort.

Great corporations and important business firms of the nation have shown their patriotism by encouraging the garden movement among their employees. One such corporation which has erected scores of model tenements for its workers, not only supplied the ground and the seed, but offered cash prizes for the best gardens in order to encourage an interest in this work among its employees. The result was most beneficial for several hundred little gardens blossomed out in new places during the spring. Thousands of firms have provided free seeds, given their employees half holidays or taken other steps to put the stamp of their approval on garden work.

One of the most active forces in the drive for more gardens has been the organized womanhood of the nation. Women's clubs and organizations in every state and community have taken an active interest in the garden campaign by planting gardens themselves, and encouraging children to plant gardens, and have offered cash prizes amounting to many thousands of dollars for the best gardens. This work has been carried on as a part of the thrift campaign in which the services of the nation's women have been urgently required.

One of the best examples of what has been done to enlist the boys and girls in garden work is found in Lincoln, Nebraska, the model school garden town of the country. Approximately 5,000 school children were engaged in cultivating home and school gardens under the supervision of the school authorities, coöperating with the federal authorities in developing the school garden plan to its greatest possible perfection.

For several years the children have cultivated school gardens as well as home gardens. Whole schools are engaged in the garden campaign, and each room has its own plot of ground to cultivate and maintain.

This work is, of course, done during the vacation season, but it is very seldom that volunteers must be called in to work a neglected garden. Prizes are offered each season for the best gardens, and in some schools the children are paid for their work in cash or receive a certain share of the vegetables they grow. The surplus crops are sold through the agency of the children's market established on a prominent downtown corner, where the children gather each Saturday morning to sell the produce raised in the school and home gardens. Canning demonstrations are held each Saturday afternoon and the left over vegetables are thus saved for future use.

The interest in the home gardens is equally keen, owing to the inducements offered for making vacation money. Vegetables not required for the family use are sold on the market, and many of the children make from \$50 to \$200 for their season's garden work. The

BECAUSE, hitherto, we have not taken the garden as seriously as its economic importance deserves we have, as a people, overlooked many fall planting possibilities for food crops. The season of next spring's fresh vegetables may be hastened by sowing seeds of hardy vegetables this fall!

While fall sowing of vegetable seeds may be unusual in northern sections; yet, it is thoroughly practical, as nature herself proves to us each spring. Here and there, chance seedlings will appear in the garden, long before the



Help the general food conservation plans by storing even a few beets and carrots in boxes of sand

gardener can sow seeds—the result of some seeds blown about the preceding fall and properly stored by nature.

The vegetables adapted to fall sowing are carrot, lettuce, mustard, smooth-seeded peas, radish, spinach, and turnip. The one important point to watch is not to sow the seeds until cold weather has come to stay.

However, October is the month in which to prepare the ground. It should be well fertilized (manure, humus, or artificial fertilizer), deeply dug, thoroughly raked and put in the identical condition as though spring garden making time were here. Where humus or commercial fertilizer is used, it should be raked into the surface rather than to be spaded deeply into the ground.

Then wait for freezing weather and just before the ground freezes hard, sow seeds as usual, cover as usual, and let nature take its course. It happens sometimes that a belated



Root crops may be packed in sphagnum moss and brought indoors to keep

profits returned by some of the school gardens are equally high, often reaching \$2,000. Cash prizes are awarded for home garden work in each school district in the city.

PRESENT SOWING FOR EXTRA EARLY CROPS

warm spell (Indian summer) causes some of the seeds to sprout and seedlings will appear. But little is lost if subsequent frosts destroy them.

Spinach will often make a good growth, sown even very late in the fall. But since it is an exceptionally hardy vegetable it is easily carried through the winter under the slight protection of a four-inch cover of strawy manure or hay or dry leaves.

Rather deep covering is advisable with all fall sown seeds because the alternate freezing and thawing of the soil causes the seeds to work toward the surface anyway.

Since all the vegetables sown this fall will mature in early spring, it is essential, of course, to sow extra early varieties, examples of which are given herewith. These are selected as illustrative types, and other equally early varieties may be substituted.

Carrots, Early Scarlet Horn, Oxheart, and Chantenay, all serve the purpose well. They mature in the order here mentioned and will beat the spring sown product by a good two weeks. Sow the seeds thinly, in rows, about 18 inches apart. Cover about one half inch deep in light soil, one fourth inch in heavy soil.

Lettuce, Black Seeded Simpson, May King and Prizehead are unsurpassed for fall sowing. All three will stand disagreeable spring weather. May King, fall sown, will form small, but tightly folded heads early in June, when spring-sown plants are just developing the larger leaves. Lettuce seeds may be sown in a manner similar to carrots.

Mustard, Fordhook Fancy and Elephant Ear thrive both perfectly during the very early spring and may be enjoyed over a longer period (in combination with spinach) because the cool weather retards their going to seed.

Peas, of the smooth seeded sorts only, are Pedigree Extra Early, Prolific Early Market, and Alaska. The last named sort, while of poor quality, is the most easily procurable. What Mr. Geo. W. Kerr says in last month's GARDEN MAGAZINE about fall sowing of Sweet Peas is equally adapted to culinary peas. Sow them in single rows, 18 inches apart, or in double rows 2 feet apart.

Radishes are surpassed only by spinach in their adaptability for fall sowing. Proof of this: more chance seedlings of radish turn up in the average garden every spring than of any

The Lincoln plan was declared the model of its kind a few years ago by the federal government and Lincoln was made the headquarters for the western end of the school and home garden movement. A new department of garden activity, known as the commercial garden work, has been added, and hundreds of boys and girls have enlisted in this work each year. This year the number was greatly increased. Children engaged in this department of gardening activity are interested in the commercial side of gardening exclusively. They are shown how to engage in the garden business at a profit, and the earnings of some of the boys and girls who engage in this work in a serious way often amount to more than \$100 for a few weeks' work. Widespread adoption of the Lincoln plan might be worth considering as a means of creating a permanent interest in gardening work in all large cities of the country.

other vegetable. Scarlet Turnip White Tip, Rosy Gem, and Scarlet Globe are sorts that will be of edible size when roots from spring sown seeds have not outgrown the seedling stage. Sow like carrots or lettuce, or broadcast like spinach.

Spinach, Prickly Seeded Winter is the best for sections where winters are very severe. Its arrow-shaped foliage does not give frost a very large surface to work on. Long Season (or Triumph) is a very much fleshier sort that requires longer to reach good size. Sow either in rows, like carrots, or scatter the seeds broadly in beds, raking seeds carefully into the soil.

Turnips, either the Early White or Early Purple Top Milan perfect handsome, flat roots, very early in the spring. Sow thinly, in rows, 12 to 18 inches apart, cover one fourth inch deep.

Vegetables from Bulbs or Roots

Onions. There is also opportunity to set out Perennial Winter or Egyptian Tree Onions, also Multipliers and Potato Onion sets. All must be planted in the fall. If kept out of the ground over winter, they shrivel badly and are apt to rot after planting. These onions



Before the root vegetables are put into the storage pit or box cut off the leafy tops, but not the root tips

will furnish both green "scallions" as well as large onions, long before either may be grown from seeds or common sets.

Asparagus, *rhubarb*, and *horse radish* may still be planted and a year's time be gained in having them large enough for use. Remember that asparagus should not be cut for at least one year after two-year-old roots are planted, and for two years if one-year-old roots are used. The same may be suggested for rhubarb. Horse radish planted now will be ready for digging next fall.

Enjoy these Delicacies at Christmas

TOWARD the end of the month (after the frost has killed the tops) go into your garden and dig up one of the largest clumps of rhubarb. Bring it into the cellar, place in bottom of a barrel and move within 10 feet of furnace. Within a few weeks you will be able to cut long, pink sprouts that will make the most delicious sauce. Of course, doing this means the complete sacrifice of the clump which will have all the life "forced" out of it before spring.

Witloof chicory roots should be dug this month, tops cut back to within an inch of crown of plant and set out again in boxes in the

★ **WHEN** a compost pile is not desired much of the **GARDEN DÉBRIS** may be used for mulching the perennial crops such as asparagus, strawberries, blackberries, rhubarb, and fruit trees provided that the material is not infested with insect or fungous enemies. In that case better place it on a pile of dry rubbish—pea sticks, for instance—and burn it without delay. Weeds that are so nearly mature that their seeds would prove a menace to future crops may be burned—but there should be no such weeds, only younger ones.

★ **BE SURE** to save all **ASHES FROM BONFIRES** because they are rich in potash which in these days is almost beyond price so far as gardening is concerned. They may be scattered on the garden soon as made without danger of loss because potash is "fixed" in the soil. Hence potash in any form may be applied in the fall, so may phosphoric acid. Not so nitrogen, especially in the form of nitrate of soda and sulphate of ammonia, because being highly soluble it will be washed out of reach of the plant roots unless the ground is well hidden by a cover crop at the time. Use such soluble fertilizers in the spring as a rule and their effects will be more noticeable and satisfactory.

★ **TO PREVENT** newly set and small fruit and ornamental trees from being whipped about and loosened by the wind tramp the soil firmly about their bases, piling it up several inches and tramping again. Then drive a stout stake on the side opposite the prevailing wind and tie the tree to it, first passing the tying material, preferably a broad band of burlap, around the tree at least once so tree and stake won't rub at the point tied. The advantage of having the stake on the leeward side is that the sawing of the bandage will be prevented and the stake will support the tree at more than one point. Stakes should be driven in the ground at least two feet and extend above four to six.

★ **IT'S** an easy matter to get new plants of **BLACKCAP RASPBERRIES**. Just let the stems

cellar. The boxes in which to grow this delicious vegetable must be deep enough to hold the roots in an upright position (8 to 10 inches) besides allowing a covering of six or eight additional inches of sand or light soil, through which the sprout should push, to be of choicest quality.

Dig up a couple of roots of parsley, trim slightly, cut back top to within an inch of crown, saving the delicate centre sprouts, however. Plant two or three of these roots in a six inch pot and keep in a sunny window in the living room. It will supply garnishing.

Taking Care of the Root Crops

HARDINESS (or lack of it) is the determining factor in handling the root crops this month. Beets, carrots, celeriac, kohlrabi, winter radishes, turnips and rutabagas must be harvested before heavy frosts become the rule, as should also onions and leeks, though these two really do not belong among the root crops, proper.

On the other hand, parsnips and salsify may remain in the open ground all winter, protected just sufficiently to make easy access to the rows possible whenever a supply of roots is wanted.

Beets, carrots, etc., may either be stored in pits in the garden, or in boxes with dry sand or soil in a frost proof cellar. In any case, see that the roots are in first-class condition, free from blemishes, bruises or defects caused by chewing insects—roots of that kind are apt to rot and will infect the others.

Root crops stored outdoors must have well-drained pits, so that any seepage of water during the winter does not spoil the bottom layers. Several inches of coal ashes or cinders spread all over bottom of pit, will serve the purpose well. Spread the sound roots over this in layers and cover with from 2 to 4 inches of soil at first. As the weather gets colder, add more soil and, eventually, some straw or mats, kept in place by boards.

Cellar-stored roots may be packed in barrels or boxes, like potatoes, for instance. When small individual boxes are resorted to for the different kinds of roots, put an inch layer of dry soil or sand in bottom of each; then place roots on top of that, filling space between with more soil. Then follow with alternating layers of roots and soil until box is nearly full, when it should be topped with soil. All root-crops will keep well if handled in this fashion and if kept away from heat and light.

ORDERS OF THE DAY

grow as long as they wish, but to reduce this length somewhat bend them over without



Save the last green tomatoes by picking after the frost kills the vines. Wrap in paper and put in cellar to ripen

damaging them and let the tips touch the ground. When they do touch, fasten them so the wind will not whip them about. In a couple of weeks these tips may have formed roots and the buds near the ends may have begun to develop shoots which in due time and with similar pegging will take root. Leave them alone until next spring unless you put a little mulch on them for the winter. But don't attempt to transplant them in the fall; they don't do as well as when spring planted—too many die. When severing them avoid cutting off too much of the parent stem.

★ **THOSE** big, old stems in the **CURRENT AND GOOSEBERRY** bushes had better be cut out. They have borne now for four years and the fruit is becoming inferior. They choke the younger proportionately more productive stems. Moreover, they are a menace to the balance of the plant because being on the wane they attract insects and diseases. As soon as the fruit has been gathered they may be cut out piecemeal if necessary to avoid damage to the balance of the bush. As to the spindly little stems that are beginning to form a thicket, better wait till spring to cut them out; their foliage will help strengthen the balance of the plant.

★ **ROSE CHAFERS** or beetles are pretty nearly the recognized "limit" of bug pests. Until a year or two ago they were believed to thrive upon kerosene and arsenates and to have such resilience that a two hundred pound man as an upper millstone and a concrete pavement as the nether were necessary to put them out of effective business. These are the inch-long bronzy olive awkward leggy beetles so common on grapes, roses, cherries, apples, raspberries, etc., *ad libitum*. Much can be done to reduce the number of beetles, which prefer sandy soil in which to lay their eggs, by destroying grasses on which the larvae feed from mid-summer till fall and again during the latter part of May—three times a week apart. From November till midspring the creatures are too far below the surface to be reached by tillage tools.



At least some of the space in the greenhouse may be utilized for vegetables. Side bench planted with lettuce and cauliflower

Food From the Greenhouse This Winter W. N. CRAIG Massachusetts

CONSTANT SUPPLY OF FRESH VEGETABLES TILL SPRING COMES ROUND AGAIN—WHAT CAN EVEN BE DONE IN A COOL CONSERVATORY

NOT ONLY must we of America plant bigger acreages but we must learn to crop them more intensively. To assist in food production (and I am referring now more particularly to vegetables) greater use must be made of greenhouses; we are aware that commercially the growing of lettuces, cucumbers, tomatoes, beets, radishes and one or two other vegetables is an important industry; we also know that on the majority of the larger private estates a greater area will probably be devoted to them the coming season, but are there not many thousands of

amateurs, who either have or could afford to have a greenhouse of modest dimensions which could be devoted to winter or spring vegetables, and which could at the same time be utilized to start vegetable and flower plants for the garden?

When traveling through Great Britain, Americans are impressed by the numerous small greenhouses owned by suburbanite commuters, to say nothing of those to be found about the allotment gardens and owned by working men. *After three years of war few of these greenhouses are closed and in fact, the government looks with disfavor on any thought of reducing the greenhouse interest, realizing that the structures can be utilized to greatly augment food supplies.* Those in our own country who operate greenhouses should continue to do so, and so increase the output of useful food crops and not from false ideas of "economy" or "patriotic" reasons tell us that they purpose to "shut down for the duration of the war!"

War time is the time to produce all possible vegetables from under glass and not a few people are now building greenhouses adaptable to their culture, and which can later on be utilized for flowers. In time of war we should prepare for peace, and a greenhouse built now will prove a good investment. The owner of a greenhouse has manifold advantages over the man who has to start plants in the home or even in a cold frame. Plants can be grown earlier and of a better quality, ensuring earlier returns.

The type of house must depend on the means of the owner. An even span structure is usually the most economical and practical. Greenhouse builders are always ready to build houses which will not prove a blot on the landscape, which can be easily and economically

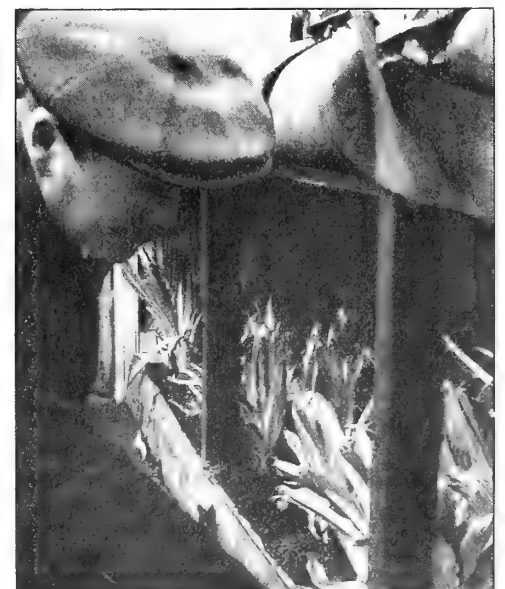
heated and cared for, and which will prove a source of pleasure to the owner.

CROPS THAT COMBINE

But what crops can the ordinary person grow in a greenhouse? They are many, but we will look only to the more important. A few (such as string beans, tomatoes, and cucumbers) require a minimum temperature of 58 degrees to 60 degrees in winter and unless a special warm division is reserved in the house it is much better to grow spring or early-summer crops of these. Vegetables needing



Tomatoes demand a higher temperature than the ordinary vegetables and hand pollination



Use the space under the bench for forcing seakale rhubarb, asparagus, etc.

cooler treatment are lettuce, endive, cauliflower, beet, carrot, pea, spinach, water-cress, mustard, cress, radish, parsley, mint, and chives. These will do well in a night temperature of 45-50 degrees.

USING UP ODD SPACE

Additional crops which can be grown below the benches include mushrooms, chicory, asparagus, and rhubarb. The mushrooms will do very well in a cool house, provided the beds are protected from drip and darkened. The asparagus and rhubarb roots succeed well on the floor at the warmest end of the house, the rhubarb and chicory should be darkened for best results. Asparagus roots can be dug from the garden for forcing or bought from a specialist in vegetable roots for forcing. Several batches can be started during the winter, the earliest can go in about November 20th. Simply cover the roots with soil and keep well watered. Asparagus can be cut in two to three weeks from planting and can be cut from profitably for four or five weeks. Then start another lot of roots.

Soil for the Benches

USE a mixture of garden loam (pasture loam if you have it) and well rotted manure, two parts of the former to one part of the latter. Mix thoroughly and leave the rougher portions at the bottom of the benches. The loam must be well enriched, as you will want to plant two, or possibly three, crops in it during the year. Cow manure is specially good for light soil, horse manure for heavier loam.

Lettuces do best in light soil and the heading varieties like May King and Hittinger's Belmont must have it; the leafy kinds succeed well in heavy soil. The crop requires from 10 to 18 weeks to mature from seed according to the season. The young plants should be transplanted into flats before being placed in the benches, 8 to 10 inches apart each way. Special care is needed in watering. The large market growers who have solid beds soak well at planting time and this usually carries the crop to maturity if the soil is stirred from time to time. A lettuce crop planted before September 15th will be headed up by Thanksgiving. If a further batch of young plants is then ready, they will come in about the end of February; before planting second crops the soil must be well forked over and some additional rotted manure or pulverized sheep manure added. Too much water will cause both rot and sun scald on greenhouse lettuces.

Radishes mature in from 24 to 40 days according to the season. Scarlet Globe and Forcing Deep Scarlet Turnip are desirable varieties.

Beets and *Carrots* are better not started until the end of January, at which time a sowing of French Scarlet Horn Carrot can be made. Sow the carrots where they are to mature, they do not transplant as well as beets. Crosby's Egyptian Turnip Beet is unexcelled for indoor culture. Seed can be sown and seedlings pricked out in the bench 3 to 4 inches apart. Both roots and foliage make good food.

Peas. Do you want a late crop of peas? Then sow a row of Buttercup, Little Marvel, or Nott's Excelsior now. Outdoors they will mildew when sown late, indoors they will not. Then again with a greenhouse you can make a sowing in January or even February and have a crop long before the outdoor ones. Give them good soil, supports, a little water and feed

well and you will be agreeably surprised at the picking you will get from a small space.

String Beans succeed only in a warm house through the cold winter months, but a sowing made before September 15th will give a picking in about 50 days. Wonder of France, Abundance, and Triumph-of-the-Frames are splendid indoor varieties. Sowings in a warm division can be made right through the winter and in 8-inch pots splendid crops may be had, but early in April they can be sown in the cool house and such a sowing will long precede those made in the open, and greenhouse beans, as indeed other vegetables have a delicate and delicious flavor.

Greenhouse *cauliflowers* are vastly superior to such as are grown outdoors where they are often subjected to severe droughts. Make a sowing of Kronks Perfection Forcing Erfurt in November. These will give nice heads toward the end of March. Sown at Christmas heads will be ready from the middle of April onward. Cauliflowers need a rich soil and an abundant water supply; as the heads appear break a couple of leaves over them to keep them white. Allow plants 12 x 15 inches space.

A few roots of *parsley*, *mint*, and *chives* along the edging of the bench will prove useful.

Spinach. A sowing of Victoria at the cool end of the house will give a picking of leaves for a long time. After April 1st a sowing of New Zealand Spinach will come along rapidly and if you can give it 55 degrees at night you can sow about the end of September and have abundant picking all winter long.

What Not to Do

THE average small grower would be well advised not to endeavor to fruit *tomatoes* and *cucumbers* in winter, but by sowing at Christmas a fine spring crop may be had.

Tomatoes need a drier atmosphere than cucumbers and it would be better not to grow the two together. Allow tomatoes 18 inches apart in the row, train to a single stem, rubbing off all side laterals and shortening back the leaves a little, hand pollination of the flowers until April will ensure a better set. Splendid greenhouse varieties are Stirling Castle, Comet, Lister's Prolific and Carter's Sunrise.

The English frame cucumber of which Improved Telegraph and Rockford are good types will be found very prolific; plants when fruiting need copious water supplies and liberal applications of liquid manure if long handsome fruits are wanted.

Various Salads

SOWINGS of *white mustard* and *curled cress* may be made at frequent intervals where these are liked in salads. Sow the seeds broadcast and very thickly and do not cover at all. Water freely and cut before the plants make rough leaves; then stir up the ground and sow again.

Water cress can be grown in the cool end of the house, it does not need to be grown in water, but will thrive so long as it has an abundant supply of moisture at the roots. Do not forget that valuable crops may be grown *below as well as above* the benches and the space can be used for water cress.

Where Mushrooms Will Grow

MUSHROOMS will do well in a temperature as low as 45 to 50 degrees at night, provided the beds are made below the benches where there are no heating pipes. It is as use-

less to plant them near heating pipes as in a dry, furnace-heated cellar.

Fresh horse manure with one fourth as much loam added and well mixed and turned over until the rank heat has subsided must be used. Dampen the manure if at all dry, when made up it should be just moist enough to squeeze together without exuding water. Make the beds 9 inches thick, pound or tramp very hard. When the heat subsides to 90 degrees spawn a foot apart, each way, using pieces of spawn the size of an English walnut, do not press the manure heavily over these pieces of spawn for 8 to 10 days. Then firm the whole bed well, cover with two inches of loam, firm again and leave alone until mushrooms appear which may be as early as 4 weeks but will average 6 to 7 weeks. But don't get downhearted even then if nothing appears as occasionally mushrooms will come abundantly after 12 to 15 weeks. They will crop profitably for 10 to 12 weeks and after that the manure can be used as a mulch on the benches or for incorporating with the soil.

Summer Use of the House

A GREENHOUSE devoted to vegetables need never be empty, even through the summer, as crops of *cucumbers*, *tomatoes* and *muskmelons* will succeed finely in them until it is time to clear them out for the next season's planting of winter crops.

Other crops than those named can be grown under glass and the house can be used efficiently to start *sweet corn*, *lima beans*, *egg plants*, *peppers*, *okra*, *tomatoes*, *melons*, *onions*, *celery*, *cabbage*, *cauliflower*, *lettuce*, which will yield much sooner than if started in the garden.

General Attention to Pests

FUMIGATION once a week with nicotine fume paper or one of the nicotine extracts evaporated will keep aphides and other pests in check. Spraying with nicotine is not to be recommended for vegetable crops indoors. A soap spray will help control white fly. For red spider, which comes with a too arid atmosphere, force of water from the hose or garden pump is the best remedy. Carefully pick off any leaf-eating caterpillars and lay a poisoned mash for cutworms. For mice try a little white arsenic mixed with burnt meal and slightly moistened.

Don't get discouraged because a few pests appear. There would be less charm in growing crops if there were no foes to fight nor diseases to combat. These may sometimes give us a bad quarter of an hour, but if it were all plain sailing we would lose our alertness and watchful care and crops would be less bountiful than they are to-day.

Color of Pansies and Hot Weather.—I suppose that other people must have observed that yellow Pansies will blossom all summer, while blue and violet ones will stop off as soon as the steady warm weather sets in. I had envied a friend this season and last because in his garden the Pansies are as bright (though not quite as large), at the end of August as they were in the spring, while mine died down early in July. Then it came to me that mine were mostly dark colors, while the others were all yellow. I also remembered that it was the same last summer, though both plots were changed, except that the colors had not been. What is the philosophy of this? And how can one handle the Pansy so that all the colors will thrive in hot weather? I recall more than one plot of yellow ones that are now in full bloom, but none of the darker colors.—*John W. Chamberlin, Buffalo, N. Y.*

A GREAT OPPORTUNITY

From present indications (September 17th) it appears that the intending planter of *Holland Bulbs*, Hyacinths, Tulips, Crocus, etc., will be grievously disappointed this Fall.

None of these bulbs, which usually arrive here in late August has yet appeared, and while it is claimed that one bulb steamer sailed before the embargo was placed, there is no further definite news of it, and one report has this steamer recalled.

At best, this country will receive but a portion of its usual allotment if any, and planted late as they must necessarily be, the planter's success will be in diminishing measure.

Your beds being ready, why not plant this Fall at least a few modern Peonies, and by planting PETERSON'S PERFECT PEONIES (acknowledged the world's standard) from now until the ground freezes, you will be assured of having a splendid display of superb flowers early next summer.

And if you place these in your permanent bulb beds, they may be safely transplanted next Fall if desired. *And, too, unlike Holland Bulbs, they will not "run out," but will continue to increase year after year.*

See my advertisement on following page

George H. Peterson

Rose & Peony Specialist

Fair Lawn

New Jersey

Really Truly Specialists

There are lots of POOR Peonies; why not have the benefit of really expert advice? Our fame is nationwide. Most everybody everywhere knows of the ABSOLUTE SUPREMACY of our Peonies. Do you? One of the REASONS is because

WE GROW PEONIES —NOTHING ELSE

Suspensions of the other reasons will be awakened by our catalogue. Instant confirmation of them if you could visit our grounds and see the plants growing—the stock we send to you. Ask those who have been here

"OUR REPUTATION HAS BEEN BUILT ON
THE QUALITY OF OUR STOCK"

DISTINCTIVE CATALOGUE TO YOU

MOHICAN PEONY GARDENS

BOX 300, SINKING SPRING, PENN'A.

MAKE EVERY FOOT OF GROUND HELP TO FEED THE NATION

If the world is to be kept from starving every foot of ground must return its full value. If you have only a few square feet of ground plant a fruit tree; if you can set an acre or more, do so.

A vegetable garden is good, but it must be made new every season. A fruit garden is best, for it will produce year after year.

A Fruit Garden Started This Fall Will Help The Future Food Supply

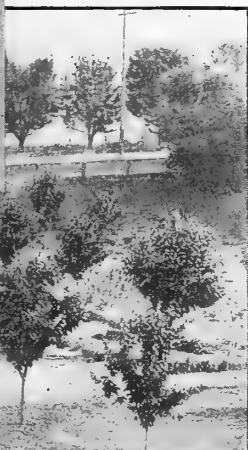
Every fruit tree you plant is a Liberty Bond for you and your country. It will help to keep all of us from suffering the pangs of hunger.

Hoopes, Bro. & Thomas Company
45 Maple Avenue
West Chester - - Penna.

Our salesman who may be in your vicinity, will help you in your plans. Ask him, or write to us

Hoopes' Specialties for the Home Fruit Garden

presents the select fruits for American gardens and orchards. Send to-day for a copy; plan your fruit garden now.



Bobbink & Atkins

500 ACRES
OF NURSERY



500,000 FEET
UNDER GLASS

Plant in the Autumn:

This is the most pertinent advice a nurseryman can give his customers. It should be printed in letters 10 feet high. Nature prepares herself well in advance. *She plants in the Autumn* and so is ready for the first warm rains of Spring. You can't improve on Nature. *Plant in the Autumn* and you will save time and money and secure better results. Weather, soil, labor conditions and prices are right—NOW. Take advantage of natural conditions and always buy where variety and stock are abundant. Thus you will secure selected quality, and your plantings will always please and satisfy.

Visit our Nurseries—only 8 miles from New York.
Catalogue of Autumn plantings on request.

Rutherford, New Jersey

Just a Talk about a Hobby of Mine*

THIS will be my last opportunity to talk to you this year on a subject that has been dear to me for twenty-three years, and in which I am to-day more deeply interested than ever—the Peony.

Each Spring so many people express their regrets to me because they allowed the previous Fall to go by without making a peony planting. I feel, therefore, that I cannot let this month go by without a final reminder while there is yet plenty of time to plant, since I consider early October the very best time of all. As a matter of fact, I do none of my own planting until after mid-October, and wherever exhibited, my flowers usually take most of the first prizes.

My appeal to you on behalf of the Peony is not merely a business one. We already have the largest and most select peony business in this country, if not in the world, and with a barrel of flour in the larder, coal in the cellar and a Berkshire hog (thanks to a fellow peony enthusiast) fattening for Christmas, why should I care?

If you knew the Peony as I know it, you would love it as I love it. The brush of a Corot, master of colors as he was, would falter before the modern Peony's wondrous range and delicacy of shades. De Longpré, the greatest flower painter of our time, threw down his brush in despair as he failed to catch the elusive tints—the wondrous sheen of the Peony.

And who can drink in the delicious perfume of to-day's varieties without wondering what a Roger & Gallét—a Colgate, would give to match what Nature gives us so freely in the Peony. And speaking of Nature, did you ever stop to think how you and Nature working hand in hand can produce *living* pictures of beauty, such as no Rubens, no Corot, no Angelo ever achieved?

A very dear old lady, who herself gave most freely of her time and wealth to the betterment of humanity, once asked me if I realized how my own efforts were making mankind happier and more blessed.

Time passes—opportunity slips by. Soon it will be a year too late. Send to-day for a free copy of

"The Flower Beautiful"

which tells you the whole story.

George H. Peterson

Rose and Peony Specialist

Box 50

Fair Lawn, New Jersey

*This advertisement appeared one year ago in the Garden Magazine and is repeated by request. It brought forth a good deal of favorable comment, both from the publishers of this magazine and from many advertising men in general.

High Pressure Vegetable Gardening

THIS idea isn't mine. I stole it, but having proved it out I'd like to pass it on. It's about the best way that I know of for getting three crops of staple vegetables a year from the same land:

Not far from Philadelphia, there is a little truck farm that bears all the earmarks of Pennsylvania Dutch ownership. Two years ago there was on that farm a field that was working as only a natural born gardener can make his fields work. This field was producing, continuously and in succession, crops of peas, potatoes, and sweet corn. I had only an instant glimpse of the field as I sped by on the car but I saw enough to convince me that it was a good scheme and I resolved to try it.

Our garden has to work as hard as any in existence for a garden with us is not some ground to play with or on which to carry on nice little experiments but a piece of land that must be made to produce its maximum quantity of foodstuffs. On a portion of it, sixty by seventy-five feet in size, we planted on April 3, Prolific Early Market Peas in rows four feet apart. About the middle of May, when the peas were well along toward bearing, Irish Cobbler potatoes were planted between the rows of peas. By the last week in June the peas were practically done bearing and were removed. In their place, after all the weeds had been cleaned out, White Plume celery plants were set out. At that time the potato plants were blooming and their leafy growth helped to keep the hot sun from striking directly on the young celery plants. Celery was substituted for sweet corn in the original scheme because it yielded a greater profit from a given area and was better suited to our conditions. As the celery grew the potato plants gradually died down until the first week in September when the potatoes were dug and the ground between the celery rows smoothed up, some of it being banked up against the celery. Most of the celery was left in the ground until November 1, when it was lifted and stored.

Under the "Dutch" method our garden produced forty pecks of peas valued at 50 cents a peck, twenty-two bushels of potatoes valued at \$1.75 a bushel, and seventy-five dozen bunches of celery valued at 50 cents a bunch. In producing this \$96.00 worth of vegetables the expenses, of course, ran higher than if only one crop had been grown. It required more seeds and plants and more labor, and we had to use more manure in preparation and more fertilizer for the crops themselves. If it had not been for the 200 pounds of 4-10-1 fertilizer, costing \$5.00, our try at intensive gardening would have been a dismal failure for we know by experience that it is impossible to get constantly good crops from our garden unless we feed the soil sufficiently.

We didn't keep an exact account of what our garden cost us but the largest estimate that we have been able to make is \$45.00, which includes our labor and leaves us \$51.00 to declare dividends with. Our season, six to seven months from freeze to freeze, is just barely long enough to allow us to get three big crops a year from our garden. Modifications in the crops to suit other soils and other climates would of course have to be made if the "Dutch" system was tried in other sections of the country.

Morgantown, W. Virginia, R. E. ALLEN.

HOLLAND BULBS

Darwin, Cottage and Early Tulips, Hyacinths, Narcissi, Crocuses, etc., of exceptionally fine quality

Order early while assortment is complete

PEONIES

Best varieties in strong clumps

PHLOX AND IRIS

in Vigorous, Field-Grown plants
New and choice sorts

*It is planting time now. Send to-day
for our catalogue*

FRANKEN BROTHERS, Deerfield, Ill.

THE most complete stock of
hardy plants in America. Illustrated catalog of hardy plants, shrubs, trees and bulbs sent free on request.

ELLIOTT NURSERY COMPANY
326 Fourth Avenue, Pittsburgh, Pa.

**SKINNER
SYSTEM**
OF IRRIGATION

**DOUBLES GARDEN
CROPS**

Saves them from drought loss. Absolutely *botherless*. Special sprinklers for lawns. Send for booklet.

THE SKINNER IRRIGATION CO.
219 Water Street Troy, Ohio

**A
COLORADO
GARDEN**

OF ALPINES AND ROCK PLANTS from the rugged slopes of the Rocky Mountains will condense more joy into a small space than any other style of Fall Gardening. The list includes rare and choice varieties of Anemone, Columbine, Clematis, Delphinium, Gentian, Evening Primrose, Pentstemon, Yucca, Hardy Cacti, and many others not commonly cultivated, all hardy and easily grown.

Besides native plants, we grow and catalogue all the best ornamentals for the Northwest, including trees, shrubs, evergreens and hardy flowers. Either catalogue free.

Rockmont Nursery, Boulder, Colo.

DUTCH BULBS are coming!

The Quality of "Diamond Brand" Bulbs of 1917 crop promises to be superlative! We are not so sure about the Quantity, but hope enough will reach us to go around.

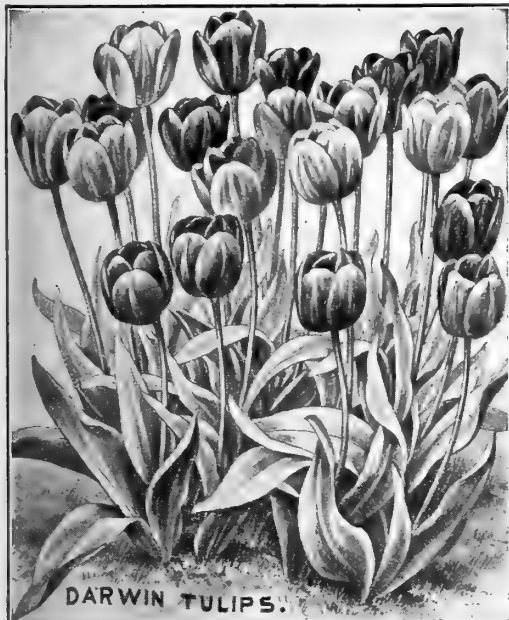
Special Offer:—To popularize the giant-flowering DARWIN TULIPS we will mail 12 blooming bulbs each of CLARA BUTT, clear salmon pink, PRIDE OF HAARLEM, deep rose shaded scarlet and GRETCHEN, very light salmon, \$1 36 fine bulbs in all, postpaid for.....



FREE!—Treasures of Bulbland

describes the choicest Hyacinths, Tulips, Daffodils, etc. Delivery in September. Write for your copy TO-DAY.

NETHERLAND BULB CO., 32 Broadway, N. Y.



DARWIN TULIPS.

10 Named Darwin Tulips for 25c

Try this test collection and see what beautiful and stately varieties we have in this new class of Tulips, that grow 3 to 4 feet tall with enormous blossoms of the most wonderful colors.

10 large bulbs, 10 sorts named, mailed for 25 cents
Our Big Fall Catalogue Free

All the best Hyacinths, Tulips, Narcissus, Crocus, Lilies, Iris and other hardy bulbs. Also Perennial Plants, Shrubs, Vines, Small Fruits and beautiful window plants for winter blooming. Over 30 exquisite varieties of Boston Ferns.

JOHN LEWIS CHILDS, Inc., Floral Park, N. Y.

Fraser's Ready-to-Bear FRUIT TREES

Dwarf Apples, 9 year old, \$15 each. Four years old Apples, Pears, Plums, and Cherries, \$1.50 to \$2.00 each. Plant them this fall; gather fruit two years from now. If you want younger trees write for our catalogue.

Samuel Fraser Nursery, Inc.
173 Main Street, Geneseo, New York

FROST CAN'T STOP A BRAVE GARDEN

It goes on green and growing Fall, Winter and Spring, if it is properly equipped with



A Cold-Frame or a Hot-Bed, or both, at a small cost will hold your plants safe and give you profits worth while and pleasure unlimited. Double Glazed Sash are best, but we carry single glazed also.

A Small, Ready-made Sunlight Greenhouse will give you the added advantage of working indoors. These also are double-glazed or single-glazed at your option.



Sunken Path House



Bench House

WRITE FOR CATALOGUE AT ONCE IMMEDIATE SHIPMENT ALWAYS

SUNLIGHT DOUBLE GLASS SASH CO.
927 East Broadway Louisville, Ky.



A Garden of Glory from Spring to Fall



With a planting of carefully selected Iris and Phlox your garden will be a mass of glowing color from June to October. The Iris with its marvelous tints and markings will be the first perennial to welcome summer with opening flowers. After it has given you a spring-ful of joy the gorgeous Phlox bursts forth to claim your admiration. Many delightful colors are shown by the different varieties, and if the proper sorts are selected, you may have a succession of bloom until October.

As it is important that both Iris and Phlox should be planted in fall, we are making special offers of several choice sorts of each.

New England Iris Collection

Maori King, gold and crimson	Each 20 cts.
Mme. Chereau, white and blue	15 cts.
Amas, rich blue and violet	25 cts.
Her Majesty, dark rose	35 cts.
King of Iris, brown and yellow	35 cts.
Princess Victoria Louise, Sulphur and creamy plum, very distinct	35 cts.

Collection of 18 Plants, 3 of Each Variety, Delivered for **\$4.50**

Cromwell Phlox Collection

Baron von Dedem, intense scarlet	Each 20 cts.
Eiffel Tower, cherry pink	20 cts.
Europa, snow white; crimson eye	20 cts.
Elizabeth Campbell, salmon pink; dark eye	20 cts.
Rynstrom, carmine rose	20 cts.
Miss Lingard, finest pure white. Very early flowering	20 cts.

Collection of 18 Plants, 3 of Each Variety, Delivered for **\$3.50**

Cromwell Gardens Handbook of Perennials, Roses, Etc.

Tells about the choice plants grown at Cromwell Gardens. If you have a garden or greenhouse you need a copy. We will send you one on request.

CROMWELL GARDENS, A. N. Pierson, Inc.

Box 12, Cromwell, Conn.

Landscape Planting Plan—Free



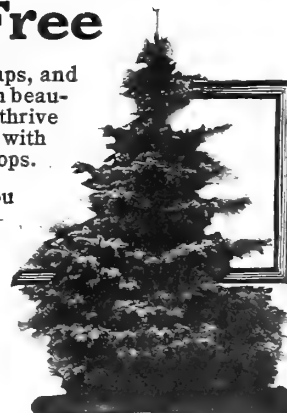
A few evergreens, some Norway Maples, perhaps, and a little well-placed shrubbery will work wonders in beautifying your home. Harrison Quality Trees will thrive in any climate, north or south. They are well-grown with vigorous, compact root systems and carefully shaped tops.

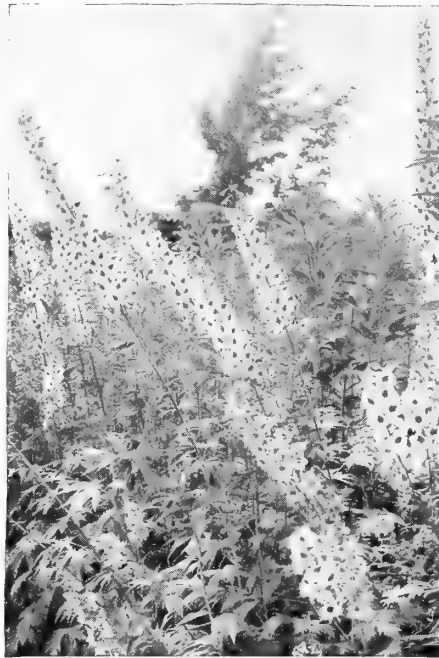
Tell us your needs. Our Service Department will help you make a selection and work out a successful planting plan—all without cost to you. Be sure to send for our 1917 catalogue—free. It describes a complete line of ornamental trees, shrubs, and vines. Also fruit trees budded from bearing orchards—all kinds. Write to-day and be prepared for the spring planting.

“Largest growers of fruit trees in the world”

Harrison's Nurseries
J. G. Harrison & Sons Proprietors

Box 56
Berlin, Maryland





Top-Notchers Perennial Larkspurs

If you like blue flowers, you simply must have some of our wonderful seedling Larkspurs with their regal spikes six feet or more in height in marvelous shades of dark-blue, light-blue and white.

Special Offer

For Immediate Planting

To introduce our new Seedling Larkspurs, we will send prepaid to any address:

12 Assorted, One-Year Old
Field-Grown Clumps, \$5

Guaranteed to bloom continuously year after year.

SEND FOR OUR CATALOGUE
"PERENNIALS FOR
FALL PLANTING"

Place Your Orders Now for November
Importation, Dormant Roses.

Charles H. Totty
Madison New Jersey

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in October

(Following dates are meetings unless otherwise specified)

- *Massachusetts Horticultural Society, Boston, Mass. Special Exhibition of Fruits, by announcement.
- 1. New Bedford, Mass., Horticultural Society.
- 2. Lake Geneva, Wis., Gardeners' and Foremen's Association.
- 3-5. Garden Club of Pleasantville, N. Y.
- Woman's National Farm and Garden Association, Chicago, Ill. Annual Meeting.
- 4. Marshfield, Mass., Garden Club.
- 5. Pasadena, Cal., Horticultural Society.
- New York Botanical Garden, Bronx Park, N. Y. Lecture: Autumn Coloration.
- 8. Park Garden Club, Flushing, L. I.
- Rochester, N. Y., Florist Association.
- New Rochelle, N. Y., Garden Club.
- 9. New York Florists' Club, New York City, N. Y.
- Gardeners' and Florists' Club of Boston, Mass. Meeting and Vegetable Exhibition.
- 10. Short Hills, N. J., Garden Club.
- Lenox, Mass., Horticultural Society.
- Nassau Co. Horticultural Society, Glen Cove, L. I.
- 12. Connecticut Horticultural Society, Wethersfield.
- Minnesota, Minn., Garden Flower Society.
- Westchester, N. Y., & Fairfield, Conn., Horticultural Society.
- 13. Dobbs Ferry, N. Y., Horticultural Society.
- New York Botanical Garden, Bronx Park, N. Y. Lecture: The Relation of Forests to Water Supply.
- 17. Rhode Island Horticultural Society, Providence, R. I.
- Tarrytown, N. Y., Horticultural Society.
- 18. Marshfield, Mass., Garden Club.
- 19. Pasadena, Cal., Horticultural Society.
- California Dahlia Society, San Francisco, Calif.
- 20. New York Botanical Garden, Bronx Park, N. Y. Lecture: Fall Planting and Winter Protection.
- 22. Park Garden Club, Flushing, L. I.
- 22-24. American Civic Association, St. Louis, Mo., 1917 Convention.
- 24. Short Hills, N. J., Garden Club.
- 24-25. Lenox, Mass., Horticultural Society. Fall Show.
- 26. Connecticut Horticultural Society, Wethersfield.
- 27. Dobbs Ferry, N. Y., Horticultural Society.
- 31-Nov. 4. American Pomological Society, Boston, Mass. Meeting and Special Fruit Exhibition.

Pomologists to Meet at Boston

THE Thirty-fifth biennial meeting of the American Pomological Society will be held in Boston, Mass., October 31—November 4, 1917, in connection with the Massachusetts Horticultural Society and the New England Fruit Show. Very full and extended programmes covering all phases of fruit growing will be rendered and an exceptional exhibition of fruits, fruit products, and allied material will be staged. Unique exhibits and demonstrations with some of our newer fruit introductions such as the Avocada, and fruit-juices as the Loganberry-juice will be in evidence.

On the whole the event promises to be one of unusual interest to American pomology. Boston's well known attitude toward both amateur and professional horticulture and pomology assures a delightful and instructive week to all those attending. The Secretary, E. R. Lake, 2033 Park Road, Washington, D. C., will gladly send full programmes. The President is Prof. W. N. Hutt, Raleigh, N. C.

American Civic Association

ON OCTOBER 22nd to 24th the 1917 Convention will be held in the City of St. Louis, which will be the first time that this Association meets west of the Mississippi, since its formation at the St. Louis World's Fair in 1904. It will give an excellent opportunity for the stimulation of greater interest and activity in civic work, particularly throughout the West and Southwest.

(Continued on page 104)

Why Willadean Service COUNTS MOST!

Most nurserymen are conscientious and sell good plants. Yet, frequently, the plants or trees fail to satisfy because they are not suited to the planter's soil and climate or do not properly fill his needs. When we started in business, nearly 20 years ago, we decided to give *Service First*, then sell plants. Willadean Service will help you avoid failures with plants. Right now it will gladly explain the wisdom of

Fall Planting of Hardy Plants and Evergreens

All plants that start growth very early in the spring *must* be transplanted in the fall or suffer a severe shock, often death. Peonies, Phloxes, Irises and all "old-fashioned" hardy perennials should be transplanted *now*. Evergreens, such as we ship, with a large ball of earth, may be safely transferred to your home ground as long as the ground can be dug. Send now for complete catalogue and

WRITE FOR FREE ADVICE

on what *you* may safely plant now in *your* locality and on *your* particular grounds. Unless we feel sure that we can satisfy you, we shall not encourage you to order. This is the attitude that earns us the loyal appreciation of thousands of satisfied customers every year. Let's get together! We'll make *your* plant problems our own.

WILLADEAN NURSERIES Sparta, Ky.

Gladioli

EXCLUSIVELY—

Order Now. Restricted imports will create an unprecedented demand for American-grown bulbs—stock will be scarce and prices high in the Spring.

Cedar Acres

B. HAMMOND TRACY, Box 27, Wenham, Mass.



Callahan Cut-to-Fit Greenhouses

set into your place as well as if a high priced architect planned them—and at a cost complete as low as his fee.

They are made in a wonderfully equipped factory, of any size you desire, and shipped to you so worked and marked any carpenter can set them up.

Factory production makes possible the best building at the lowest price. Hence they have every approved feature, and are as durable as they are artistic. Quality construction in every particular.

Let us send you our catalogue telling all about them.

CALLAHAN DUO-GLAZED SASH CO.
1315 Fourth Street Dayton, Ohio

Peonies You Will Like

Big, glorious flowers, a single one of which is a whole bouquet in itself; marvels in size, yet graceful in form; of charming tints and shades, delightfully fragrant and long lasting after cutting, such are

Brand's AMERICAN SEEDLINGS

The sturdiest, ruggedest peonies that ever grew. They surpass many of the choicest imported sorts in freedom of bloom and worth-while characteristics. Because we have faith in the future of these distinctly American creations, we have gathered about us the largest collection in the East. Exceptional care in growing and labeling them enables us to offer them

Guaranteed True-to-Name

Plan to plant some this month. Our collection of both American and European varieties consists of over 400 of the choicest. All dug, packed and shipped with greatest care to insure you the choicest flowers quickly. Send for free catalogue, describing all we grow in our nursery. Besides peonies, we grow every year about 500 distinct sorts of choice Gladiolus. Become acquainted—write NOW.

BABCOCK PEONY GARDENS, R. F. D. No. 80, Jamestown, N. Y.



Archie Brand—None Better

Our Bulb Specials

include the newest and most beautiful types of Tulips and Narcissus.

Collection A 75c

One each of the following rare Narcissus and Daf-fodils:

Elvira, King Edward VII, Cas-sandra, Madam de Graff, Glory, King Alfred, Glory of Noordwijk, Red Star, Firebrand, White Lady.

75c Collection B 75c

One each of these mag-nificent Breeder Tulips:

Bronze Queen, Cardinal Man-ning, Chas. Dickens, Chestnut, Feu Ardent, Fairy, Golden Bronze, Go-det Parfait, Lucifer, Madras, Ma-hony, Prince of Orange, Sabrina, Yellow Perfection.

Our Free Catalogue

Is a Textbook on Bulbs. Beautifully il-lustrated and giving exceptional infor-mation. It is a book you will keep for study and reference. Send for it to-day.

WOOD, STUBBS & CO., Louisville, Ky.

INCORPORATED



Roses for Fall Planting

Plant now for indoor bloom this winter and for early out-door bloom next summer. You'll find a lot of helpful suggestions in our

Autumn Floral Guide

Lists and describes Pot Roses for indoor bloom, Own-root Roses and Hardy Climbers for out-door fall planting. Also hardy Ornamental Flowering Shrubs, Peonies, double herbaceous Hardy Perennials, Hyacinths, single and double, Tulips, tested on our own grounds, and fall seeds for fall planting indoors and out.

Send a postal for the Guide to-day

CONARD ★ ROSES
& JONES CO., Box 24, WEST GROVE, PA.
Robert Pyle, Pres. A. Wintzer, Vice-Pres.
Rose Specialists—Backed by 50 years' experience.

KRELAGE'S BULBS For Fall Planting



We have arranged to supply our patrons with a limited quantity of choice hyacinths, Narcissi, Darwin Tulips, etc., in popular as-sortment from stock in New York. A list of these will be sent free on request by

J. A de VEER, 100 William Street, New York
Sole Agent for E. H. Krelage & Son, Haarlem, Holland

IRIS PEONIES PHLOX

- 12 Choice Iris named \$1.00
- 12 Choice Phlox . . . 1.00
- 12 Peonies 2.00

Send for list

GEO. N. SMITH, Wellesley Hills, Mass.

Don't pay a nickel each for Peaches and Pears

when you can pick them off the trees

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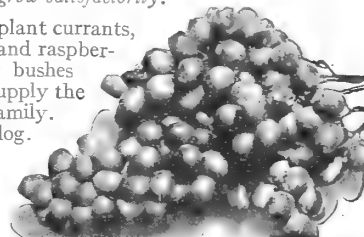
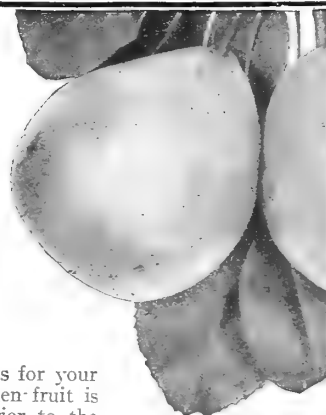
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(Concluded from page 102)

Women Horticulturists' Meeting at Chicago

THE Woman's National Farm and Garden Association, organized to promote the practical training of women in outdoor occupations, will hold its annual meeting in Chicago, October 3rd, 4th and 5th at the New Morrison Hotel, Corner of Clark and Madison Streets. The President of this Association, Mrs. Francis King of Alma, Michigan, is well known to our readers, and its membership includes upward of 2,000 women actively engaged in a large way in farming, gardening, poultry and cattle raising. A cordial invitation is extended to every woman to write to the Secretary, Miss Hilda B. Loines, 600 Lexington Avenue, New York City, for further information.

Big Events for St. Louis in 1918

BY A radical change of plans the Society of American Florists' has taken a decidedly progressive step in arranging that its annual Convention for 1918 shall run simultaneously with the great biennial National Flower Show at St. Louis, April 6th to 15th. Mr. C. H. Totty is elected President for 1918, and in 1919 the Convention will go to Detroit. The united gatherings at St. Louis next April should be the greatest meeting of horticulturists, florists, and gardeners ever brought together.

Some Bulbs Assured

THE bulb situation this year is very complex and from indications, at this writing (September 15th) there is little likelihood of any Dutch bulbs even arriving in this country before the first week in October. Under normal conditions the bulbs are usually here about the latter part of August or the first week in September, and the dealers anticipate an enormous congestion of business in the effort to fill in six weeks orders that ordinarily are spread over twelve weeks. "Just now," writes one large dealer, "in fact I hardly see how the thing can be done." The purchaser must indeed possess himself in patience, and be considerate in the matter of delays, etc., and not blame too much to the dilatoriness of the dealers, who this year at least will possibly be entirely innocent.

About three weeks ago a report appeared in the newspapers to the effect that the Holland government had prohibited the exportation of bulbs. Retail catalogues were ready for distribution and had to be held up pending further advices. Quick action on the part of the trade through the Holland Ambassador and our own State Department at Washington disclosed that this embargo referred only to small bulbs which had been sent last season to Germany for the feeding of cattle, and that there was no embargo on the normal supplies of the class of bulbs handled in this country. The only difficulty was the transportation.

Large quantities of bulbs have undoubtedly been on the docks in Rotterdam since early in August, and we understand that 26,000 cases left on board the S.S. *Waaldyk* September 7th, due to arrive about the time this issue of THE GARDEN MAGAZINE is published.

Now, while the dealer will of course do all in his power to get off all shipments when the goods arrive, the purchaser must be patient, but before all else he must needs also act promptly in placing his order if he does not want to run the risk of "getting left," for "first come first served."



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Price per 100. Twenty-five of a kind at 100 rate, provided order totals 100 bulbs or more.

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Lilacs begin to thrive so early in the spring that transplanting during that season often produces a serious setback and subsequent loss of a season's bloom. By setting out these highly ornamental and most useful shrubs *this month*, you gain a whole year of enjoyment. While planning which kind to plant, consider our exceptionally choice collection of

New Hybrids on their Own Roots

Own root lilacs are the *only* kind to plant. They are sturdier, hardier, bloom more freely and will always come true, no matter how severely they are pruned. The following choice varieties are our leaders:

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California's Native Plants Do Well in Eastern Gardens

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The Charm of English Gardens

is obtained by plantings of hardy perennials. At The Terraces I have what is probably the most complete hardy plant collection to be found west of the Alleghanies.

My New Catalogue E contains lists of about 200 different Irises, besides complete lists of Phlox, Larkspurs, Hollyhocks, Poppies, Michaelmas Daisies, and many other beautiful flowers. Full cultural directions are also given. Catalogue E, or any of my catalogues, will be sent free on application.

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How about Peonies? We grow them. Send for named list. 1917 Reliable Home Grown Seeds also. Order from this ad direct, mentioning the Garden Magazine

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Vegetables Planted in Autumn

TURNIP-ROOTED chervil is a good vegetable for home use. The edible part is the root, which is used in the same manner as the carrot. The leaves are used the same as parsley for garnishing and in flavoring soups. I sow the seeds in the open ground as early as possible in the autumn. It germinates the following spring and matures in early summer but is improved by remaining in the ground. As a fact, radishes are suited to early spring and late autumn planting. I sow the seeds of Early Scarlet Short Top, French Breakfast, etc., in a hotbed or a cold frame, and they are easily grown during the winter. Spinach is well known as the standard plant for spring and fall greens, although for home use it may be grown also during the summer, especially the New Zealand variety. To have an early supply for home use, some grow it under glass. I don't. I sow the seeds in the open ground in early fall and it produces an abundance of greens during the late autumn and early spring. To be sure with the crop over winter and to hasten its early maturity, I slightly top-dress the beds with manure in the fall. It does well. My winter supply of lettuce comes from the seeds of Boston Market, sown in the autumn in a cold frame, the plants being later transplanted in a hotbed. It takes from 60 to 90 days before it is ready for use. By the time the lettuce is consumed we have ready for use the Green Curled variety of endive, which seeds I sow a month or so earlier than the lettuce seeds. I plant corn salad, which is valued for salad purposes, for greens and seasoning as the plants are hardy and it takes only 60 days to get the crop ready for use. I make two sowings in the autumn, both in a cold frame, one for late autumn use, September 1, and the other in the late fall, to be wintered for early spring use. For a winter supply of garden cress I sow the seeds in boxes, and cress is easily grown in the house. Succession sowing may be made as often as every 30 to 40 days. Parsley is the most popular of all garnishing herbs. The leaves are used also for salads and for flavoring. It takes 90 to 120 days to make the crop ready for use, so, in order to have an early crop of parsley, I sow the seeds in a cold frame in September, and make successional sowings continually. For winter I transplant the strongest plants to cold frames, so as to gather leaves all winter.

For an early supply of cabbage, I sow the seeds of the Jersey Wakefield in the autumn in a cold frame, the plants being later transplanted and wintering under sash. During the winter the plants make a slow, steady growth. With some hardening before transplanting in the open ground early in the spring, a good crop of early cabbage may be expected. In order to have an early spring supply of onions, I plant the potato or multiplier onion sets in the autumn and a succession crop in February. The sets planted in the fall remain in the soil over winter and produce excellent early green onions, and by the time these onions are consumed, the crop planted in February is ready for use. I also plant in the autumn the small bulbs of the top or tree varieties, which produce onions the following season. The Welsh onion seeds stand well the winter of our vicinity and I sow them liberally. The leaves are mild in flavor and are used in seasoning. They are ready for use just by the time the chive beds are heavily picked off and couldn't be relied on for some time to supply the seasoning for home use.

Maryland

SAMUEL H. GAREKOL.

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Here's a thoughtful gift for the boy or girl away from home or for any friend whose palate appreciates tasty delicacies. **Kumquat, Guava and Scuppernong Jelly. Orange and Pineapple Preserve and Grape Fruit Marmalade** of such high quality as to be distinctive and unforgettable. Just think how these would taste to you through a lonesome Yuletide or through a period of convalescence and send them along! A satisfying, airtight, unbreakable cupful of the choicest of the warm Southland's sweet-meats in a green wooden box bearing a poinsettia decoration and a beautiful, hand-tinted presentation design and verse—all sent postpaid for \$2.00. A timely suggestion from 1000 in the **Pohlson Year Book of New and Distinctive Gifts** that carry a message of discrimination and thoughtfulness. This book, sent with any purchase comes alone for 6c in stamps. It is a marvel of ingenuity—the key to a shopping season of delight. Send for it.



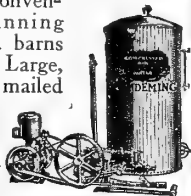
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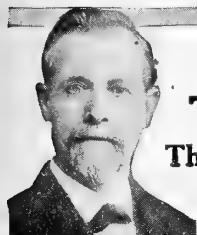
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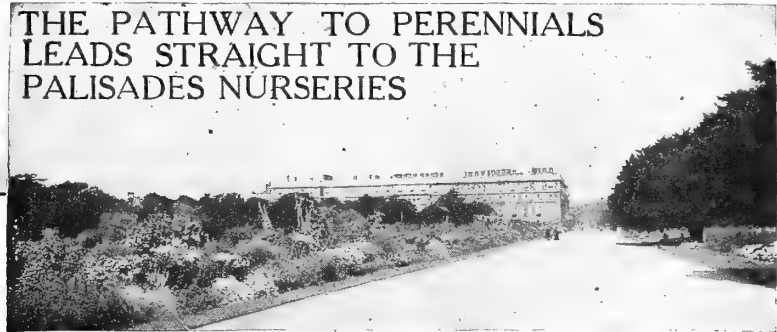
The Fall is also the time to set out Hardy Perennial Plants, Vines, Shrubs, etc. Our Autumn Catalogue also gives a complete list of seasonable seeds, plants and bulbs for out-doors, window garden and conservatory.

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A Highway of Perennials leading to Hampton Court Palace, London. By planting this Fall a similar effect can be produced by Next Summer.

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or so-called Old-Fashioned Flower worth growing, we have it in one shape and another in quantity the year round. We have the largest stock in this country, all Made in America, and our prices will average **15c each, \$1.50 a dozen, \$10.00 per 100.**

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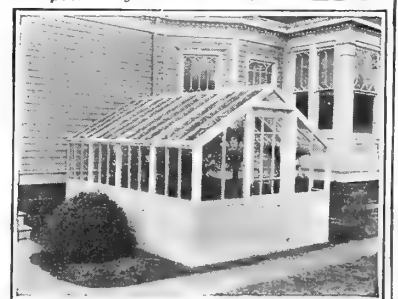
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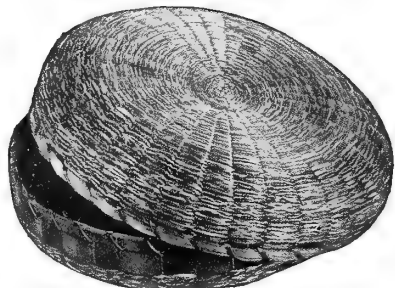
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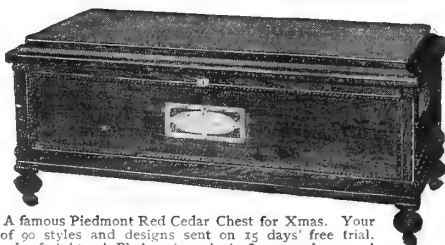
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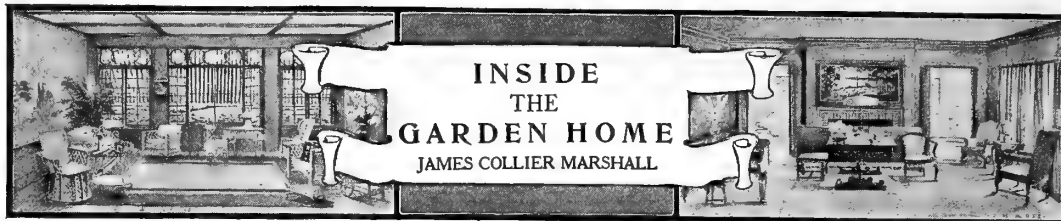


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Some Good Things for the Small House

Mr. James Collier Marshall, Director of the Decorating Service of The Garden Magazine's Advertising Dept., will solve your problems of home decoration—color schemes, hangings, floor coverings, art objects and interior arrangements, making purchases at the most favorable prices. This service is free to our readers. Address inquiries to "Inside the Garden Home," The Garden Magazine, 11 West 32nd Street, New York.

THERE is no place in the house where artistic effects can be achieved so easily as in the dining room. Here all is a matter of taste in selection and careful arrangement. Once the furnishings are decided upon the decorative and useful adjuncts apparently follow of their own accord.

All the articles shown here are well suited for use in the small house where costs must be reckoned, and of those the dishes at the foot of the page are especially worth while. Note its unusual shape, the ribs of which are outlined with dull gold, that adapts it for use either with antique or modern furniture. An open stock set, it is very reasonable, the whole service of 108 pieces costing only \$68.50.



The cut glasses seen here, copied from the old Waterford pattern, will be excellent companions for the white and gold china, though, of course, it is not so cheap. This fine new replica of an old design is perhaps better looking than its prototype since the glass is clearer and the cuttings more sparkling for that reason. There are seven different glasses in the complete set—cocktail, claret, sherry, liqueur and the three shown here, water goblet \$50 per dozen, champagne \$45, and finger bowl \$50.



Aside from these staples for table use there are some very interesting things for individual use. A little yellow pottery coffee pot with creamer and sugar tray arranged in stack form is one of these and may be had for the trifling sum of \$1.25. It is excellent for the breakfast tray.

An oval tin tray about 15 inches long is also an interesting and useful adjunct of the small house. A brilliant parrot is wonderfully painted on a soft green ground and framed by the black rim. Price, \$3.

Tables are always good and there can never be too many of them.

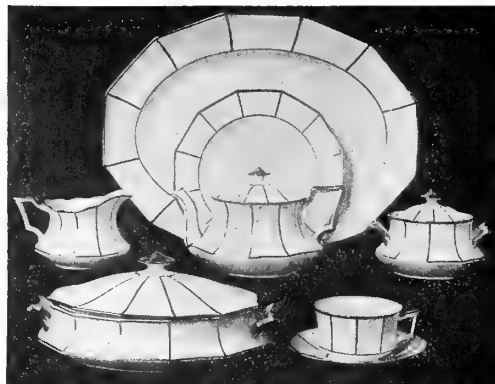
"Only once in my experience," said a well known decorator, "have I seen a house that seemed to have too many tables—they were everywhere and of every description. But as they were all in use I feel obliged to admit they were necessary. However, the trouble lay not in their number but in the fact that they had not been properly selected for use with one another. Had this point been carefully attended one's attention would not have been attracted to their presence."

Never was a truer statement made regarding any object of decoration though it doubtless applies more to tables than to other things. Tables are very necessary and several are needed in nearly every room, but they must be suited not only to their surroundings but to each other since here the comparison is keenest.

The lyre drop-leaf table shown here is essentially a living room or hall piece, though it might under certain circumstances be used in a man's sitting room where it would be excellent as a smoke table since its dimensions, 2 feet tall and 20 inches wide are well adapted for this use. Its lyre design suits it well to the Sheraton, Heppelwhite and Early American types of furnishing, and at \$35 it is very reasonable.



Entirely different is the dainty tray topped stand seen beside it. This is distinctly Italian in design, its whole top being charmingly painted in ivory, or green, after the florid Florentine manner. Besides, it is distinctly feminine and should be used only in those parts of the house that are strictly the woman's domain—the dining room, beside the tea table and in the boudoir. Beautifully made it sells for \$41.



Another table very satisfactory for living room and hall is of mahogany with four carved spool legs, two of which fold in very closely, permitting the round top to tip up, like an old fashioned tip table in effect though far more staple and strong. It will appeal especially to those who must conserve space and who need some combination arrangement for tea service and cards. Of mahogany it sells at \$17.50.

There is also a low mahogany stand patterned after the Louis XV designs, which is intended for telephone use. This has a capacious undershelf for telephone books and a shallow drawer in one end for a memo pad and pencil. This is quite inexpensive.

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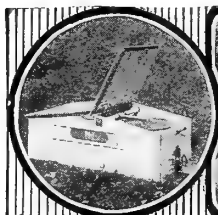
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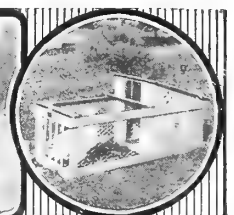
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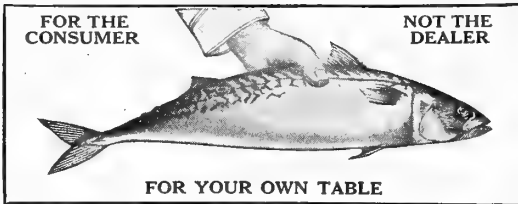
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Every Library must contain a complete Kipling — that R. K. is if you plan to afford your children the heritage of the Anglo-Saxon family.

Published by
Doubleday, Page & Company
Garden City, New York



BEGIN now to bank up the celery with earth but only if it is dry, otherwise it will rot. Tie a soft twine around the celery plants, beginning at one end and twisting the twine around each plant down one row then up the next and down the third, using the same ball of soft twine to the very end of the last row. Pack the earth around the plants and as the plants grow pack it around again and so on until it is a high mound, and at the end of November cover all with pinetags or straw, and on top of this place boards to hold it down, and slope the boards like the roof of a house to take off the rain and snow. The celery from the very first should be constantly sprayed with bordeaux to insure against blight, and should also be fed with nitrate of soda or manure water to push it along.

IN THE orchard remove dead limbs, prune away the limbs that crowd each other, so as to let in the sunlight, and keep the young trees headed low to simplify the gathering of fruit. Plant all fruit trees in the Autumn, except the stone fruits. Plant the deciduous trees and shrubs, with the exception of the Tulip Poplar and the Birch. February is the best time for these, as also for evergreens.

Sow grass seed for lawn and orchard. Hyacinths, Tulips, Narcissus, Crocus, Lilies and other outdoor bulbs should be planted now. Those which were planted in pots for the indoor garden the last of August can now be brought into the house to bloom for Christmas. Bring the potted bulbs in every two weeks so as to have continuous bloom throughout the winter, first putting them in the cellar and then bringing them to the light and warmth of a sunny window.

Get in all the tender plants, either putting them in a pit, greenhouse, or conservatory. Remember to give plenty of air every day, but do not let the air blow directly on the plants when the weather is very cold. Water the plants thoroughly so the earth in the pot be wet through, and not a little sprinkling on top.

Save seed of specially fine vegetables and flowers this year, because of the scarcity. Send in your order to the seedsmen as soon as possible, and order a sufficient amount so as to have continuous crops next season, planting as much in your vegetable garden as you can well take care of.

Push to maturity the lettuce in the coldframes by feeding with manure water, and make another sowing of seed for a later crop, planting some in coldframes and some in a protected place in the open ground for a crop in April.

DIVIDE perennials; plant hardy Roses, plant tender ones, from pots, in spring. Trench the Rose beds by digging about two feet deep between the Roses and filling in with well rotted cow manure with a little bonemeal.

In planting out currants, gooseberries, raspberries, grapes, and all fruit and ornamental trees and shrubs dig deep holes putting rich earth with a handful of bonemeal in the bottom, leaving the poorer soil for the top. Pack the earth firmly about the roots, placing a stake on either side to which tie the tree so as to prevent the strong winds displacing them.

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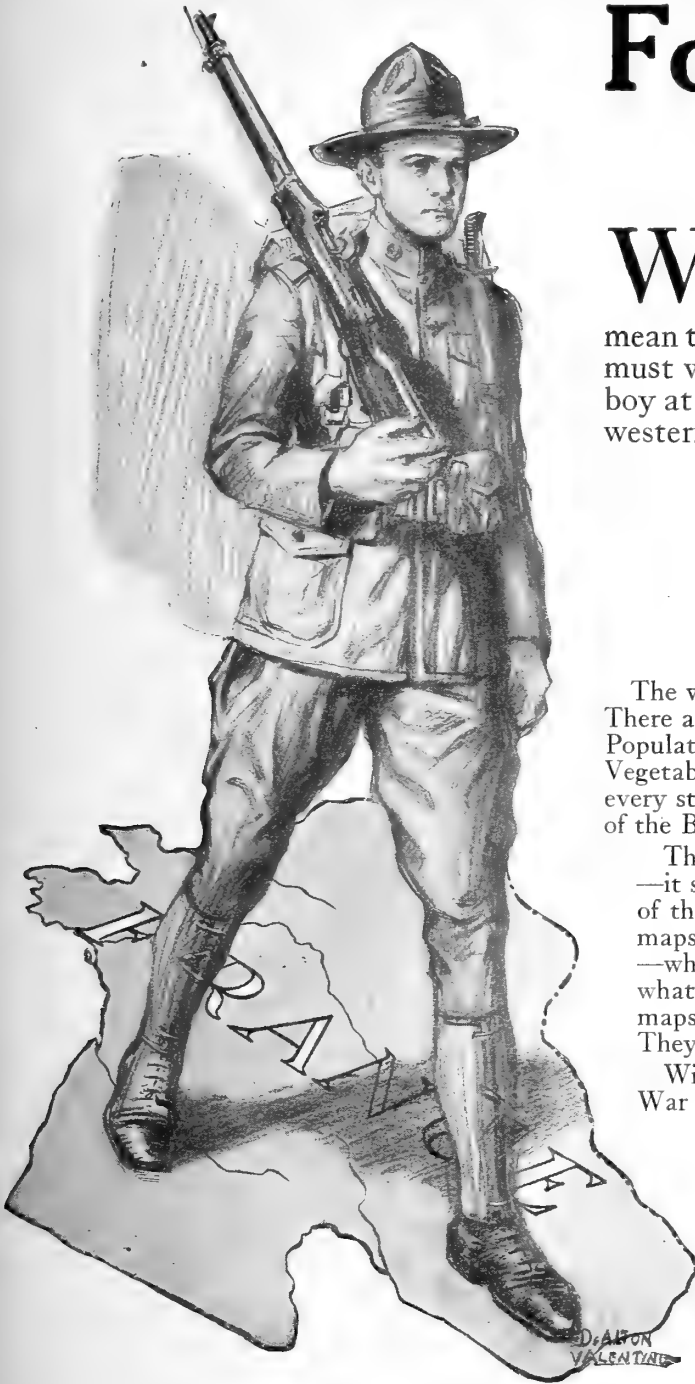
The wonderful details of the western front form only one phase of this great work. There are 240 pages of maps—Maps Political, Economic, Geographic, Vegetation, Population, Language, Racial, Physical, Historical. There is the Dictionary of Vegetable, Animal, and Mineral Commodities. There are Automobile Maps of every state in the Union—Postal and Railroad Guide for the United States—Maps of the Battle Fronts.

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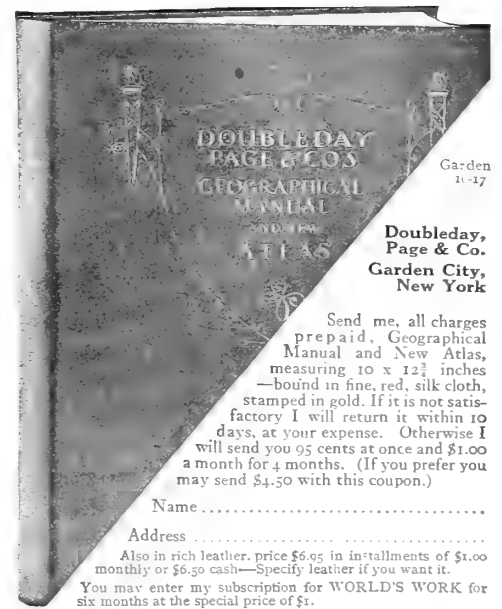
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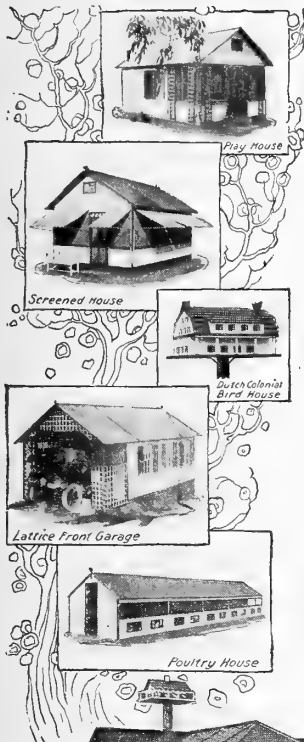
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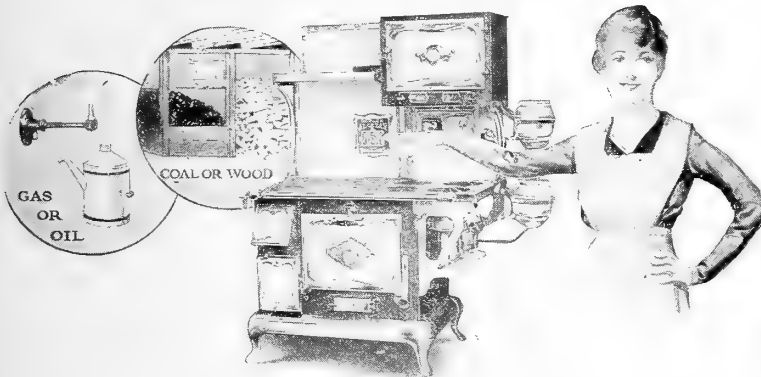
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November, 1917

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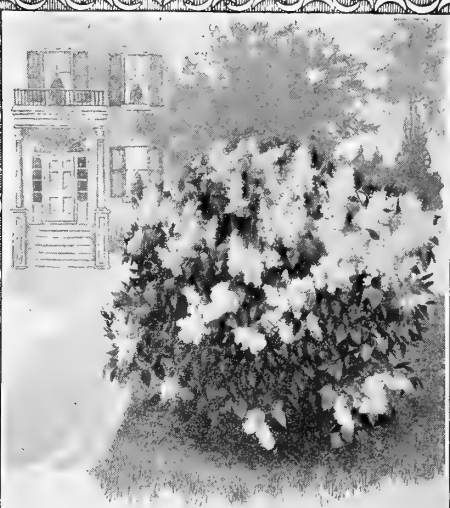
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THE GARDEN MAGAZINE

NOVEMBER 1917

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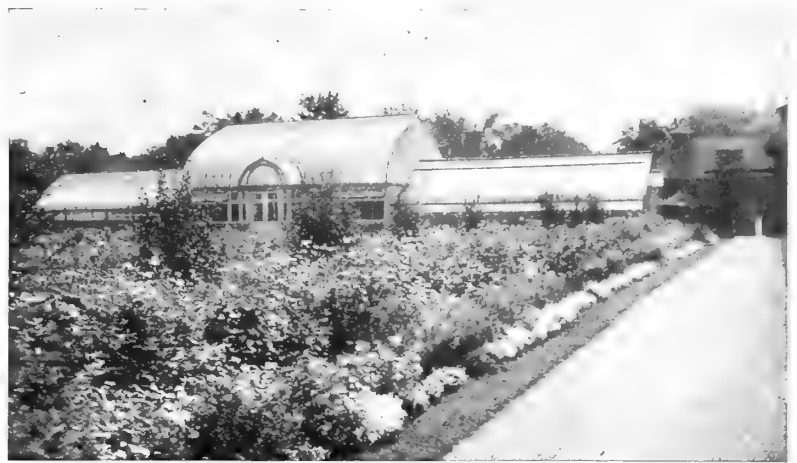
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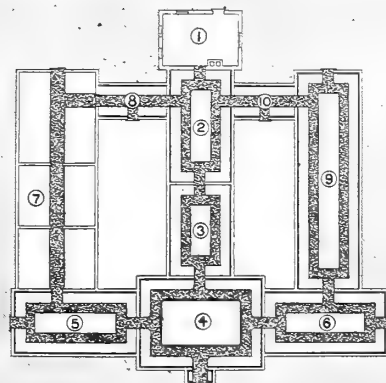
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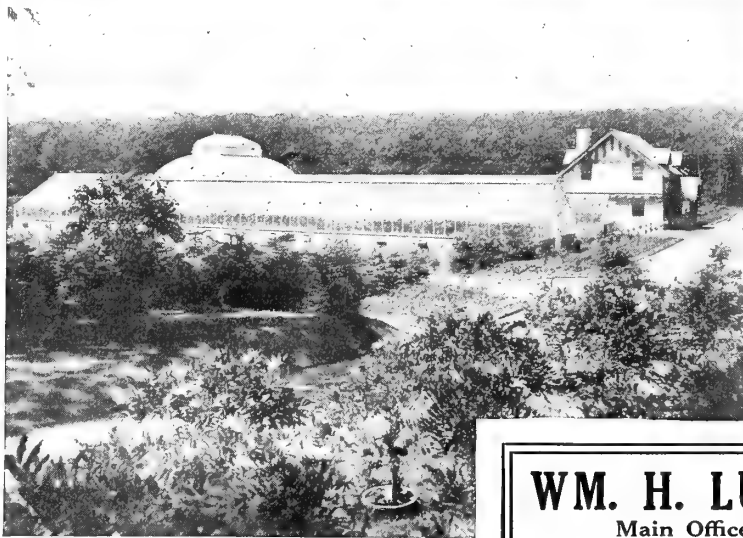
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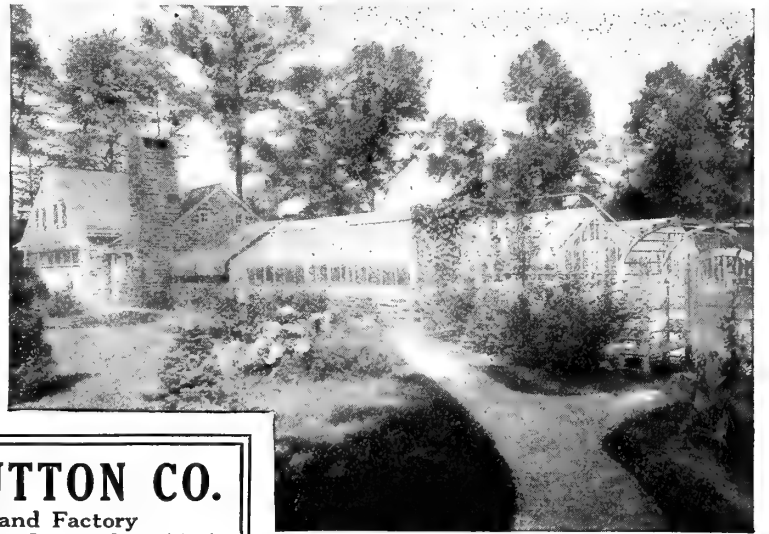
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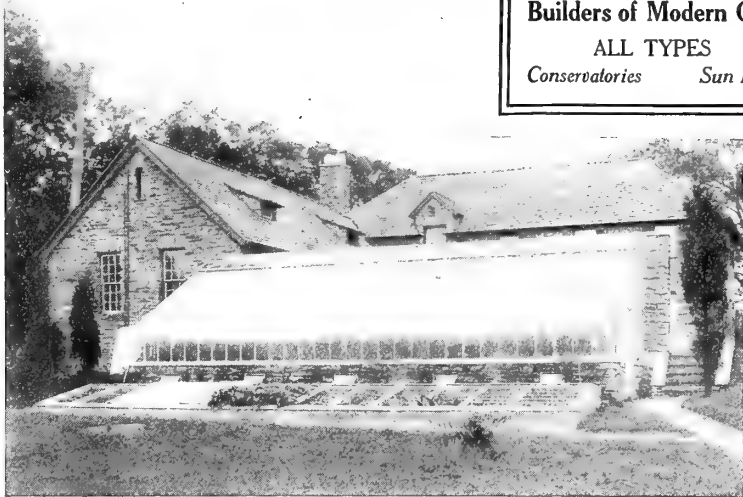
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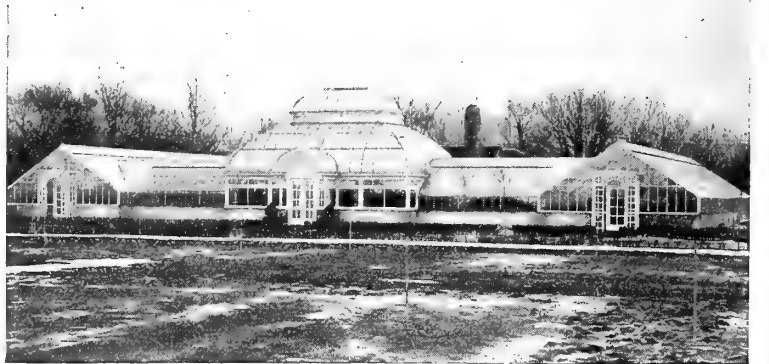
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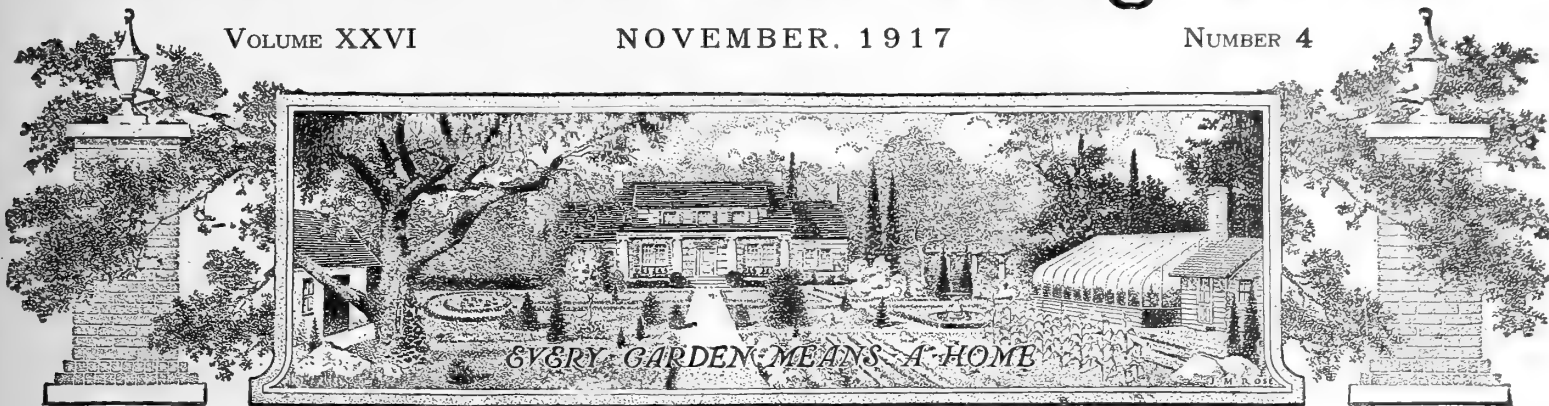


The Garden Magazine

VOLUME XXVI

NOVEMBER, 1917

NUMBER 4



AMONG OUR GARDEN NEIGHBORS

Irises as Soil Binders—We have read with a great deal of interest, in the June number of *THE GARDEN MAGAZINE*, the article by Miss Sturtevant, giving some of her experiences in raising Irises from seed. It is to be hoped that her suggestion in regard to the formation of an Iris Society may be acted upon at no distant date. Is there not a partial answer at least, to the question: "What shall I do with the ones I do not want to keep?" in the use mentioned for this type of Iris by Miss Tomlinson of Tennessee, in the same issue? In describing "a hillside garden," she tells us she planted German Iris to bind the soil. We know of another admirer of the Iris in California, who had a lot of Iris sent from an Eastern home, to plant on the terraces of her garden in her California home, for she said she had found they were the best plant to use for the location, to prevent washing of the soil. We are also told that in a certain locality in France they grow in millions, being used to hold together the sand banks that surround the vineyards. Surplus stock, particularly of the cheaper varieties and these new seedlings which are too good to throw on the dump heap—some better than many now being cultivated—could be utilized for this purpose at slight expense provided one is not fortunate enough to have the stock.—*Mrs. J. Dean, Moneta, California.*

The Hardy Yellow Rose—In connection with the hardy yellow Roses mentioned by A. E. Thatcher in *THE GARDEN MAGAZINE* for April and R. S. Sturtevant in the July issue, it may be of interest that the Copper Austrian was wintered successfully here, for several years, where the temperature will be as low as 40 degrees below zero every winter, at some time. It was not killed back at all until last winter when there was severe frost and no snow until Christmas. The Scotch Yellow was not injured in the least. They have no protection of any kind, being on the open prairie, but ordinarily the snow covers them from four to eight feet deep. The Wichuraiana Hybrid, Klondyk, has survived our winter as has the Soliel d'Or ("earthed up" twelve inches or so). The Persian Yellow and Harison's are hardy here. This year I am trying Yellow Austrian, single and double; Gottfried Keller, an Austrian Hybrid; and Daniel Lusneur, the only yellow Rugosa I have met, although Dolly Varden is described as apricot, and sometimes

as pink. There is no lack of hardy Roses of other shades, but yellow is rare here.—*A. W. Mackay, Canada.*

A Few Facts—I bought my first copy of *THE GARDEN MAGAZINE*, February 1905, at the newsstand and, strange to say, have been buying a copy there each month since that time. Not very good economy, but I have always considered that *THE GARDEN MAGAZINE* was cheap at any price. This is the season for fish stories, so a seed story may add variety. Last March I concluded I would sow some seed of the Cardinal Climber indoors, to get an early start. After filing the seeds as per directions, I planted them in a bulb pan, watered them and placed a pane of glass over the top, after which I set the pan on the radiator (vapor system heat). This was at 3 P. M. At 10 o'clock that night one seed had sprouted, and the next morning the young plants were all up with their heads against the glass. Can you "beat" it? My friends all look sad when I relate this story. I wonder why?—*A. A. Knoch, York, Pennsylvania.*

Is the Fireless Cooker Used in Canning?—The article on "'Doing Up' the Surplus From the Garden" which appeared in *THE GARDEN MAGAZINE* for June was accompanied by a photograph showing a fireless cooker, but I have never seen rules for its use in canning—"fool proof" rules, I mean.—*J. H. Cary, Mass.*—The fireless cooker may be used in canning. Prepare the vegetables in the morning. When the fire is started in the range to get dinner the vessel containing the cans is put on the range, also a soapstone disc. By the time the water in the container boils the disc is hot, and both are placed in the fireless cooker for one hour. A demonstrator from the College of Agriculture at Ithaca claims that the same results may be obtained by blanching the vegetables and leaving them in the fireless cooker for four hours. I have had such splendid results with the three days' method that I have never tried the other way.—*E. E. Trumbull, New York.*

Why Does the Beetle Attack this Aster?—Every book on gardening and countless impassioned articles impress upon one the value and beauty of Hardy Asters. So far I have failed to notice even one mention of any difficulties incident to their cultivation. In my own garden, however, in Loudoun County, Virginia, they are

useless, as the aster beetle attacks them as ferociously as it does the Annual Asters. I have tried all the best known varieties and one only, Mrs. Raynor, is immune. It is only these garden forms that are touched; the native species in our woods and along our lanes are absolutely untouched. It seems very strange that this trouble should be experienced only in my own garden—I doubt very much if it is so confined. And I think that the warning should be given to gardeners in our latitude (having about the same conditions as Philadelphia) that one's final garden effect should not come to naught. Do you know whether spraying would be helpful?—*Mrs. Floyd W. Harris, Washington, D. C.*

New Buddleia or Summer Lilac, from Seeds—Did it ever occur to you, who is an admirer of this new summer flowering shrub, that you can raise it from seed and obtain a plant different in growth, shape of leaf, shape of blossom stalk and even size of individual blossoms? Two years ago we sowed a lot of seed from a faded blossom spike and hundreds of plants came up—amongst them were several entirely different from the parent plant. The flower spikes, instead of being tapering or pointing and gradually blooming out, are rather solid in appearance and round, not at all tapering and more blossoms are out at one time, and the individual blossoms are larger giving the whole bush a much handsomer appearance; these new hybrids are very vigorous, rapid in growth and all together are a great improvement over the type.—*The Pudor Farms, Washington.*

Buddleia Davidii, to which the numerous forms known as Veitchii, variabilis, magnifica, Wilsoni, etc., are referred, is extremely variable and our correspondent's form is undoubtedly merely another seedling variation and not a hybrid at all. Indeed a similarly compact form was seen at an exhibition of the Horticultural Society of New York in August.—*Ed.]*

Flowers in February—In the September number of *THE GARDEN MAGAZINE* a lady makes mention of some of the flowers that give her a succession of bloom through every month of the year, but states that she does not always get outdoor bloom during January and February. She ought to add to her collection The Christmas Rose, Helleborus niger, which blooms profusely under the snow in midwinter.—*H. G. R., Pa.*

Antirrhinum Gibraltarica.—The Snapdragons such as we grow for cutting or bedding may on rare occasions live through the winter but are not dependable. In *A. gibraltarica* we have, however, a thoroughly hardy species which blooms right through the summer. The plant is particularly well adapted for culture in the rock garden, attains a height of 18 inches and carries spikes of pink flowers. It has come through the past two winters with no protection other than a very thin coating of leaves such as is given to other such plants and can, therefore, be classed as reliably hardy. I have not noticed any rust or blight on this Snapdragon, although the ordinary varieties grown for forcing or bedding are badly affected.—*W. N. C., Mass.*

Ferns for House Plants.—Many people have had my experience with the florists' all-ready-to-sell collection of Ferns in a fern dish. It is bought with high hopes; its life is short. When one considers that the florists put into a collection any of forty or so varieties of little Ferns, it is not surprising that such a selection is often a poor one. It is far better I find to specify varieties desired and have the fern dish filled with these. Among the best ferns for the house are the following: *Pteris cretica albo-lineata*; *Pteris Wilsoni*, a variety of *cretica*; *Polystichum Tsus-sinense*; *Pellaea viridis*; *Cyrtomium falcatum* variety *Rochfordianum*. The last named is a Holly Fern, one of the very best of ferns for fern dishes, single specimen plants and window boxes.—*E. E. S., Brooklyn, N. Y.*

When Room Plants Become Leggy.—A very good way of dealing with Rubber plants, *Dracaenas*, *Cordylines*, *Aralias* and similar room plants that have grown spindly—or leggy as it is called—is shown in the photograph. In the first place, it is needful to cut a small pot in half with an old saw. Then at about the middle of the stem make a long slanting cut upward *half way through*. Fill the two halves of the pot with damp moss and place one on either side of the cut portion of the stem, finally tying into position as shown in the



Lowering a "leggy" plant by inducing root formation at a convenient height

illustration. Keep the moss damp and in a month or so the upper portion of the plant will have sent out a quantity of roots into the damp moss. When this has taken place the upper portion may be severed from the rest of the plant and potted up separately. Very often after this treatment the lower part of the plant sends up some shoots and, apart from the new specimen secured, its own improvement will be the outcome.—*S. Leonard Bastin, England.*

An Original Sundial.—The accompanying photograph shows a "home-made" sundial, which conforms to the garden and house to which it belongs. The house is a remodelled farmhouse surrounded by orchards and



Bird bath made by setting rough stones in cement around a shallow basin

fields bounded by old stone walls. These walls furnished material for the sundial, only the very choicest moss and lichen-covered stones being used, and all laid up in Portland cement. The flowers (all hardy perennials) in the garden are planted around an oval grass-plot, and the sun-dial stands in the middle of this with stepping stones leading to and around it from each side covered entrance.

Narcissus bulbs are to be planted at the base this fall for early spring flowering, followed later by summer flowers.

The dial itself is of bronze. But it is the cement top which is unusual, being rounded off and roughened to look as much like one of the stones as possible, and having ferns and leaves pressed into the cement while it was still soft and removed just before it dried. A bird bath was made in the same way, using an old china wash-bowl as a foundation built up with cement to be shallow enough to please our feathered friends. The basin is surrounded by paving stones laid in cement. The imprints of the ferns and leaves look not unlike fossils. Indeed those in the bird bath might have been made by leaves falling from the Maple tree overhead.

Some time there is to be a teahouse at one side, with a thatched roof and stone seats; built in a semi-circle into the stone wall which separates the flower from the vegetable garden—and which, covered with vines—forms the wonderfully artistic background for the whole garden.—*B. S. Provost, Winsted, Connecticut.*

Fall Color in the Rock Garden.—It seems as though a rock garden was mostly a spring garden but with September my hit-or-miss patch (that for lack of better term I call a rock garden) has gathered charm. A few big plants of *Campanula rotundifolia*, still decked with their lavender bells, are rampant; a little colony, near by, of the doubtfully hardy *Parnassia caroliniana* with its shiny basal leaves and eight-inch stems bearing sea-foam-white buttercups forms a bit of contrast. Farther on, gray *Artemisia* struggles for supremacy with the tender green of *Sedum*

spectabile, its rather dull mauve-pink touched off by the deeper tones of the variety *Brilliant*. Here and there wild *Asters*, the smooth leaved *laevis*, the starry *ericoides* and clustered *cordifolius*, have seeded in; the shade-loving *co-rymbosus* lightens most happily the dull "magentery" pink of *Lespedeza Sieboldi* which throws its graceful sprays out over an outstanding boulder, while lower down in the moist shade the white again enlivens the scattered yellow of the Wood Goldenrod. Here also are dull blue Closed Gentians, late lingering Cardinal-flowers and the frosted fronds of Ferns. The frost brings many a colorful tint to a wider landscape but in my restricted space where perennials reign alone *Euphorbia corollata* is all that gives a scarlet bit of autumn glory. Weirdly well does it blaze above clumps of the true Autumn Crocuses but most painfully does it swear at the pinker tones of *Colchicums*. How fortunate it is that garden things are not always just to your mind for where then would be that pleasure of striving for the ideal?—*R. S. Sturtevant, Wellesley Farms, Mass.*



Such a sundial is easily made from a few large stones and a little cement

Mr. Duffy's Essay* in the September issue of THE GARDEN MAGAZINE is the cause of this communication. In the past, I had had a great deal of trouble handling the by-products of the chicken crop, and having solved the problem to my own satisfaction, my experiment may be of use to Mr. Duffy or others who have had similar difficulties. Several years ago my attention was called to a commercial poultry litter and the advantages claimed were: that it did away with the use of dropping boards and always kept the house dry and odorless. I have been using it now for five years and the results are most satisfactory. The house is cleaned about three times a year and the fertilizer put in barrels in a dry place to use when wanted. When removed it is a dry odorless powder and is very easy to handle. It does not bake the soil; in fact, I think that the peat of which the litter is made improves it. While the litter is rather expensive, I think the resultant fertilizer more than repays the cost, and its use certainly reduces work in the hen house to a minimum.—*B. Preston Schoyer, Pittsburg, Pa.*

Meconopsis Integrifolia.—It is now some eleven or twelve years since Mr. E. H. Wilson first sent to England seeds of this extraordinary plant from Western China, and when subsequently exhibited in flower, for the first time at the Temple Show, I believe, it immediately arrested the attention of all interested in hardy plants. Although several species of *Meconopsis* were known and cultivated it was not supposed that any of the genus could develop flowers of such wonderful size and beauty, and though of only biennial duration it was at once recognized as one of the most remarkable of the many new plants received from Mr. Wilson. Leaving England soon after, I did not have an opportunity of becoming better acquainted with this *Meconopsis*, but in the early spring of 1916 I saw seeds advertised in an English list, procured



One of the plants of *Meconopsis integrifolia* flowered by Mr. Thatcher. "Possibly the most gorgeous alpine extant."

some, and the results may interest GARDEN MAGAZINE readers.

The seeds were fortunately fresh, which is important in cultivating *Meconopsis*, and sown in shallow pans with ample drainage and light sandy soil; quickly germinated in a cool house and as soon as large enough to handle were potted off singly into small pots in a mixture of loam, decayed leaf mold and sand. When well established after the move they were transferred to a coldframe and kept well shaded from the sun. In this situation they made healthy looking plants, and by the middle of summer were ready for larger pots or planting out. Having only nine or ten plants I decided to put them in eight-inch pots with plenty of drainage and in a mixture of loam and well decayed cow manure, an ingredient to which this plant is extremely partial. By fall strong plants had resulted, and when the leaves died off, a healthy looking crown was left for the next year. The pots were wintered in a coldframe with sufficient protection of leaves to prevent their breaking. About the beginning of May, I was glad to see the new growth starting up, and then removed the plants to an open but shaded position, keeping them well supplied with water when necessary. This treatment apparently agreed well with them, for by the end of July strong stems were being sent up from the centre of half a dozen plants, and during the third week in August *Meconopsis integrifolia* flowered for the first time in America. (As noted in the September issue, page 39.)

Mr. Wilson, in his most interesting book, "A Naturalist in Western China," writing of the *Meconopsis* says: ". . . and *M. integrifolia*, with yellow flowers eight inches or more across—possibly the most gorgeous alpine plant extant." This description is well deserved, and after seeing a few plants in flower in this country one can well understand what a wonderful sight it must be to see many thousands of these great blossoms thickly huddled together on the mountain

slopes of Western China, in its home among the snows. The leaves of *M. integrifolia* are eight or nine inches in length by two in breadth, silvery green in color and densely covered with strong hairs, as indeed is the whole plant. The flower stem, about one and a half inches through at the base, rises some twenty inches above the foliage, and carries from five to seven cup-shaped flowers. The first flower to open on each plant is somewhat larger than the others. The terminal blossoms on the plants flowered here were seven inches across, and the subsequent ones six inches. The color is a most beautiful pale yellow, and the beauty of the flowers is much enhanced by the conspicuous yellow stamens clustered around the base of the corolla.

During the past spring I obtained more seeds which germinated well and have made a splendid growth planted out in heavily manured ground on the north side of a hedge. As this *Meconopsis* grows at an elevation of from 15,000 to 16,000 feet amid almost perpetual snow there can be no question of its perfect hardiness, and its successful cultivation is not difficult. It is essential that one obtain fresh seed, and from the time that this is sown until the plants flower there must be no attempt at coddling. A cool, shady position, and a soil well enriched with cow manure are the most important cultural points to observe.—*A. E. Thatcher, Bar Harbor, Maine.*

Why Buddleias Die.—The Buddleias, or Summer Lilacs, are so persistent flowering that every garden should contain one or two of them. Having grown a number of varieties I have decided that *variabilis magnifica* is decidedly the best, its racemes are long and full and carried in wonderful profusion. I find that these Buddleias need no winter protection, provided they are not cut back in the fall. [This is our experience, too.—*Ed.*] Leave all the growth on until spring, then cut back close to the ground for the best results. A good many have made the mistake in doing this cutting back in late fall and in nearly every case plants have then died. As we occasionally get temperatures here of 10 to 15° below zero, Buddleias may be classed as reliably hardy. A very pretty border just now has a background of *Buddleia magnifica*, in front of this a broad band of *Anemone japonica alba* with a bordering of *Heliotrope*.—*W. N. C., Mass.*

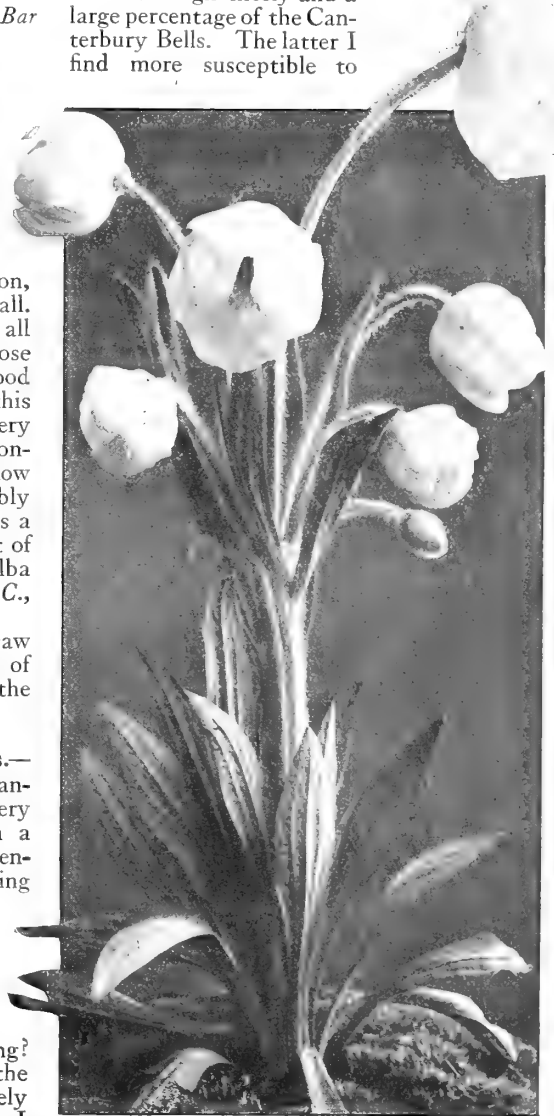
[In a garden at Woodmere, L. I., we saw lately, a large number of self sown plants of the *Buddleia*. They had sprung up all over the garden.—*Ed.*]

Wintering Canterbury Bells and Foxgloves.—I have tried for several years to raise Canterbury Bells and Foxgloves, but with very poor success because I cannot hit upon a scheme for wintering them. I have no greenhouse nor coldframe even, my garden being only a 200 x 12 ft. border. Has any one else in the latitude of Chicago had success in wintering these plants under these circumstances? I understand that it is not the cold but rather the rotting of the crowns caused by standing water. Would overturned boxes make a suitable covering? I am trying this year, too, to raise some of the rarer perennial Bellflowers besides the lovely biennials. Are they also hard to winter? I take a wealth of magazines but can truly say that THE GARDEN MAGAZINE gives me a

pleasure that none of the others furnish.—*"Flower Lover," Illinois.*

—Canterbury Bells and Foxgloves cannot be wintered with any assurance of substantial success in the latitude of the northern half of Illinois without a coldframe. In fact, I have given up raising them after some years of struggle because I prefer to devote the frames to other subjects such as a crop of St. Brigid Anemones and *Ranunculus* for spring cutting and to winter *Chrysanthemums* of doubtful hardiness, Wallflowers, Tufted Pansies, parsley, November and early December head lettuce, and for an early start for some vegetables in the spring.

While Canterbury Bells and Foxgloves are showy and altogether desirable, I think it is necessary to have a good sized planting, one hundred plants, say, to develop their full gardening value. If the plants are grown to proper development in the fall to produce their best crop of flowers, they are bulky and take up a lot of room in the limited quarters of a coldframe. The best success I have had with them outside a frame consisted in raising the seedlings in a row, thinning them enough to allow full development, and then in the fall covering them with planks, supported on bricks sufficient to clear the foliage without pressing upon it. I should say that the row was hilled up. In this way the Foxgloves came through nicely and a large percentage of the Canterbury Bells. The latter I find more susceptible to



Well grown example of the rare *Meconopsis integrifolia*. Leaves 8-9 inches long, silvery green; flowers yellow, 8 or more inches across. (Photograph made in England.)

moisture than the Foxgloves. They are hardy so far as cold is concerned but the crowns must be kept reasonably dry and protected from the thawing and freezing so common in this section.

Here is another catch in this method. Having brought them through the winter, it becomes necessary to transplant them into the quarters reserved for them. In disturbing the roots in moving them, a large number will devote their energy to reestablishing themselves and will not throw up blossom spikes. To be sure of a crop of bloom they should be allowed to remain in permanent quarters. To obviate the difficulty of moving them I have wintered Canterbury Bells in eight inch pots in the coldframe. As they make a big root growth, they naturally become cramped and when planted out in the spring do not give the vigorous growth of blossom spikes that they should.

When I want a display, now (and every once in a while I revert as I have had them on and off for years), I improvise a coldframe with soap boxes and such vagrant window sash as I can lay hands upon, and place it over the plants where they are to bloom. This is an easy matter and the idea of making them air and cold tight need not be considered. The main consideration is to keep them dry.

The same idea applies to that stately of all fall garden biennials, the Chimney Bellflower, *Campanula pyramidalis*. All three are biennial and really are more trouble than they are worth unless one has at his command ample coldframe facilities. The improved forms of the Peach-leaved Bellflower, *Campanula persicifolia*, I find an acceptable substitute for the Canterbury Bell. They are not only perennial but come through all sorts of weather without any fussing save a light mulch of leaves or pine needles in the fall.

Foxgloves often will survive the winter without protection—that is, while the central crown dies, there will be side buds to survive and grow. I have two large flourishing clumps now awaiting cold weather which came up from self sown seed two years ago and have come through without blossom crowns, but plenty of leaves. I am letting them alone in the hope that possibly next spring they may function. The old-fashioned Yellow Foxglove, *Digitalis ambigua* or *grandiflora*, is the hardiest of the tribe; that is, it is most resistant to changes of thawing and freezing and is more nearly perennial as I have had it endure for three or four seasons, but it succumbs in time.—*Sherman R. Duffy, Chicago, Illinois.*

A Gardener's Winter Pastime.—There are many indoor activities for the gardener during the cold season. There are outdoor activities as well. One of the most pleasant of these is the gathering, trimming, sharpening, and storing (ready for spring use), the brush for peas, and the poles for all kinds of climbing

beans. After all, there is no support for peas like brush, and the wise gardener will always use it; while poles are essential for climbing beans. Aside from the fact that it is a delightful outdoor pastime, the gathering of brush and poles in cold weather is desirable because winter is the time for such work. All the bushes and trees (except the evergreens, which could not in any event be utilized) are bare. The eye can see at a glance what is good and what is not. Also, the material so gathered, while bare, and with most of the sap down, will be green and tough and strong, and will last through several seasons. This plan is surely far ahead of the crude custom of visiting some old heap of dead brush (usually from an



A novel idea for small bulbs. Planted on floating pieces of cork with moss

orchard's pruning) and trying to pick out something which is not too brittle or too rotten to use—and doing it in haste, at a time when there are a thousand other calls from the growing garden.

While small attention has been paid to the kinds of brush and poles best adapted to the use to which they are to be put, there is something of importance to be said on that score. Among the very best brush for peas are the heavier trimmings from Privet hedges; young Oak bushes (especially Scarlet Oak) that have a habit of branching heavily; Wild Cherry shrubs; and sprouts from any hardwood stumps except Hickory and Chestnut—these last, sending up long straight shoots, are undesirable on account of their lack of small branches. However, these very ones are admirable for beanpoles. As a rule they are straight and strong, and their lasting quality is excellent. Among other woods that are well adapted to this purpose are common Birch, Alder, all kinds of Oak, Ash, and Gum. In the South young Pine saplings are frequently used. Of course, it may be said that poles of any kind will support beans; and this is commonly true. But a pole

of any kind, after one season's use, may collapse; any kind of a pole may be crooked, scrubby, unsightly. Even in the growing of so unromantic a product as beans, the element of beauty should not be neglected.

I cut poles and brush with a sharp scout-hatchet; and as for getting the gathered matter home, I follow different plans. Sometimes it is pulled in on a handsled; sometimes it is stored away in a secret place until I have time to go for it; sometimes I shoulder it in, or drag it in, about twenty poles at a time.—*A. Rutledge, Mercersburg, Pa.*

Spice Sweet and Sweet Bough.—In looking over some back numbers of THE GARDEN MAGAZINE (which is a good thing to do), I came across a neighborly note from M. G. Kains in eloquent praise of the Sweet Bough apple. I was particularly interested as I have on my place a very old apple tree whose identity has puzzled us and I seem in Mr. Kains's note to detect a clue. Our tree is near the kitchen door, as if placed conveniently for small people, and about here it is called Spice Sweet. This however, I feel sure is a local name as I have not been able to find it in apple lists of either books or catalogues. Local plant names are always interesting and this one is particularly pleasant sounding and descriptive, but as our old tree is well down the other side of the hill toward the sunset—so old that though we have done all we know to prolong its valued life, its seasons are plainly numbered and we are anxious to plant others against the time when the spring sunshine shall fail to awaken its fragrant blossoms. Mr. Kains's adjectives descriptive of the Sweet Bough, "delicious, luscious, scrumptious, spyschious" so exactly repeat those used by my youngsters in praise of our favorite, who add delightedly "the juice just runs down our chins, mother," that I am hoping that they may be the same. It is a green apple with an alluring pink cheek; it is sweet even at its greenest and so juicy that one's chin is really in danger of inundation. Mr. Kains lays stress upon its apparent harmlessness to the very young. Here again is a point in common. Our Spice Sweet appears to cause no trouble though eaten with but short intermissions from early rising to early going to bed. Plainly it is an apple to be considered if one could but find its true identity. If Mr. Kains can help us we shall be grateful, or if any neighbor knows another name for this old-fashioned apple, which might be well named "The Mother's Friend," we shall be so happy to hear it.—*Louise Beebe Wilder, Pomona, N.Y.*—[Spice Sweet is a "good" name, according to the "Apples of New York" where it is recorded as of a variety commonly grown about 1830, but no description is given. Can it be that Mrs. Wilder has a real relic of old times—it's quite possible that the old variety has persisted in that region remote from travel.—*Editor.*]

THE MONTH'S REMINDER

CLEARING UP AND CLEARING OUT FOR WINTER

THERE are plenty of things to keep the hustling gardener occupied during the shortening days of November, if he is to get everything cleaned up and ship-shape before winter.

Bringing in the last of the tender bulbs needs early attention now. They should be

taken up before the ground actually begins to freeze, and be stored where they can dry off gradually, and still be safe from frost. Do not cut off the old stalks close to the bulbs or roots. Leave six to twelve inches attached when you take them up, so that they can "ripen off" gradually and naturally—other-

wise they may shrivel or rot. Handle with care all fleshy roots such as Cannas and Dahlias.

After the bulbs or roots have had a chance to dry off (but before there is danger of their being sufficiently dried off so much as to cause shrinking or shrivelling) carefully

label and store in open boxes or crates in a place where the temperature will be around 40 degrees, and away from light. The very tender bulbs such as *Caladium*, *Calla*, etc., will need a temperature some ten degrees higher.

Vegetables for Storage

ONIONS, squash and such other vegetables which may have been stored in temporary quarters to cure may now be put where they will be safe for the winter. Look over everything with the greatest care. Any that are imperfect or show even the slightest kind of bruising or decay must not be stored but used at once.

Most fruits and vegetables keep best in an even temperature only a few degrees above freezing. A wet cellar, tightly closed, will surely cause decay; while in an abnormally dry air, close stored products will fail to keep or will shrivel, causing loss not only in bulk but of quality too. Good ventilation is one of the important points about the storing place. For full details, and directions for storing, see the October number of *THE GARDEN MAGAZINE*.

Going to Use Concrete?

WALLS, foundations, fence posts, repairs of all kinds and jobs innumerable about the grounds can be made with concrete. It is not difficult to use, but the one big danger at this time of the year, just as the gardener begins to find himself caught up with his work, and with a little leisure for new things, is that it may be spoiled by freezing weather before it has a chance "to set." The danger from light frost can easily be avoided by covering up the work with warm horse manure or even with blankets and bags, until it is beyond the danger point—the first night or two after being put in place. If you have never yet made use of concrete for such work try it out this fall. It is simpler than most kinds of carpentering or repairing. The only equipment needed is a supply of Portland cement, clean, sharp sand or clean, hard gravel or cinders, and a strong, shallow box or stout, flat surface—such as an old shutter or cover for the hotbed—a hoe to mix them with and a shovel to put them into place after they are mixed. From any of the firms selling Portland cement you can get literature full of excellent suggestions on what may be done with concrete.

Get Ready for Spring Before Winter Comes

GET together supplies needed for starting seeds, repotting plants, etc., in February and March, when the garden is frozen up tight. Put a barrel or two of good loam or loamy compost down cellar, together with sufficient supplies of leafmold, chip-dirt, moss, sand, and any other ingredients you are likely to require. Coldframes or hotbeds, if they are not used through the winter will take some time to get into shape for planting if all preparation is left to spring.

Trench Celery for Fall Use

THE earliest celery, which has been blanched in the open, will now be about used up. That wanted for use until real hard freezing, say till the last part of December, may be handled readily by "trenching" it out of doors. Select a convenient, well drained place and open up a narrow trench, fifteen inches or so in width, and deep enough so that when the celery is packed in it—roots and all—the tops of the foliage will come about level with the ground. In taking up the plants, leave on all the soil that clings to the roots. Do not "handle" the plants in wet weather, but put them away when dry, pack-

ing them closely, upright. As soon as there is danger of weather cold enough to hurt the celery, cover the trench over with marsh hay or leaves, preferably the former. As it gets still colder, put soil over the mulch, for further protection. The stalks will bleach out quickly in the trench, and can be taken out as required.

Running a Winter Resort for Bugs?

DON'T get the mistaken impression that the job of cleaning up the garden at the conclusion of the season is for the sake of looks alone. One of the most effective steps toward controlling insects and diseases is to prevent their finding any place in the garden where they can put up for the winter. One small pile of rubbish or a handful of diseased leaves left on the ground over winter may carry enough eggs or spores to be the source of total failure of several crops next spring! *A match in time saves ninety-nine garden troubles!* Make a thorough job of it. Begin at one end of the garden and clean up as you go—any old stalks, cut-off tops, brush, poles, whatever may be left, row by row—until you get to the other end. Flower-beds and borders are much more likely to be overlooked when

DO THIS MONTH

1. Take in tender and semi-hardy bulbs before ground freezes
2. Put vegetables in permanent winter quarters
3. Do concrete work for walls and so forth before frost
4. Provide soil and other materials for next spring's planting needs
5. Trench celery for fall use
6. Clean up the garden
7. Clean up the flower beds
8. Take up roots for forcing
9. Mulch bulbs, hardy borders and roses
10. Bring in first bulbs for forcing
11. Provide suitable conditions for plants in the house
12. Watch carefully vegetables and flowers under glass
13. Begin winter spraying

it comes to cleaning up than is the vegetable patch. But it is just as important to get them cleaned too.

When the tops have been killed down by frost, go over every bed carefully. Remove the annuals and burn them, as soon as they are dry enough. Take a scythe or sickle and cut off the tops a few inches above the ground. Remove these to a place where they can dry and be burned. Rake up any fallen leaves which may be diseased. Prevention pays! Replace by a clean mulch.

Save Your Temper and Your Tines

BEFORE the ground begins to freeze take up roots of asparagus, rhubarb, and Witloof chicory for winter forcing. If the soil is very dry, water thoroughly a few hours before you take them up. Then store them in a frame or cool cellar, where they can be taken into heat as wanted. In taking up roots an edger with which to cut off the ends of the largest roots under the plant is a very handy thing in addition to a sharp spade. Another scheme is to put a heavy mulching around the plants to be taken up, so that the ground will not freeze for some weeks later than it ordinarily would.

And Now Put the Garden to Bed

IF YOU have followed the suggestions given in previous months you have provided yourself with marsh hay, dry finely rotted manure, and dry hardwood leaves, put away under cover where they are dry and easy to get at. Now is the time!

As soon as the ground freezes up fairly hard, with the prospect of remaining so, is time to use these coverings. The winter mulch is not for the purpose of protecting the plants from the cold. *They can be killed with too much care.* It is to prevent the winter and early spring sun from flirting with them, and raising hob by thawing the ground about their roots and getting them all excited about coming out in their new foliage before warm weather really means to stay, that the thoughtful gardener puts on a winter mulch.

Dry manure is good for the perennial border, about newly planted hedges, and in other places where much of it can be raked or forked into the soil in the spring. For the Rose bed, nothing is better than dry leaves, held in place by a low strip of wire netting supported by small stakes. Manure can be applied under the leaves, but care should be taken not to put it in position, *either here or any where else, before the ground has frozen* and the mice have taken up their winter quarters elsewhere. For the new bulb bed, manure with a good percentage of straw, or manure and leaves mixed together, makes a good mulch. Tender Roses may be given additional protection by drawing the soil up about them in a steep cone, before the mulch is put on.

Blossoming Bulbs for Thanksgiving

THE first of the winter blooming bulbs to be put in the frames, pit, or cellar for root-growth may be taken in now for "forcing" if they have made a fairly good mass of roots. Hyacinths and Polyanthus Narcissus are the soonest to be ready for bringing into heat—either in the greenhouse, or in the dwelling. Give a very cool temperature at first, then gradually increase both water and temperature. If you haven't any bulbs started, try Hyacinths in a few of the special hyacinth glasses, and Paper-white Narcissus and the Chinese Sacred Lily in pebbles, or better, prepared fibre or humus.

Half a Day for the Plants in the House

ONE reason why plants in the house so frequently fail is because no serious effort is made to give them congenial conditions. The dwelling house is by no means an ideal place for plants—and incidentally the atmosphere that is too hot, "stuffy" and dried out for plants to live in it, is far from being good for humans! If you are going to have a window garden, take a few hours and fix it up so that the flowers in the window can be really watered without spoiling the carpet on the floor. If a bay window is used, a curtain can be hung in such a manner that the plants will be somewhat shut in by themselves a good part of the time, and during sweeping, dusting, etc., they can have a cleaner and more moist atmosphere.

Ready for Enemies?

THE green plant louse will get you if you don't watch out!

Conditions under glass are usually such as to make more likely the attacks of insects and disease than in the open. The most certain to appear, and the most troublesome, if you allow him to get a good start, is the ordinary aphid or plant louse. Fumigate regularly and spray at the first sign. Careful watering and plenty of fresh air, with an avoidance of draughts, will reduce greatly the danger of trouble from mildew or blight or dropping or yellowing foliage. The last two are sometimes due to the presence of illuminating or coal gas, even if in such small amounts that the human nose doesn't detect it.

The Arnold Arboretum—What It Is and Does

By C. S. SARGENT, the First Director

Illustrated by photographs made in the Arboretum

THE question is often asked: What is the Arnold Arboretum and what is it expected to accomplish for the benefit of the world?

A department of Harvard University, the Arboretum is a museum of trees and other woody plants and its object is to increase the knowledge of such plants. This museum owes its origin to the imagination of George B. Emerson. In 1868 James Arnold, a merchant living in New Bedford, Massachusetts, died and at the suggestion of Mr. Emerson left \$100,000 to trustees, of which Mr. Emerson was one, to be used by them for the advancement of agriculture or horticulture. Mr. Emerson had long been interested in trees and had prepared for the Commonwealth an excellent "Report on the Trees and Shrubs Growing Naturally in Massachusetts," which had been published by the state. Another of Mr. Arnold's trustees, John James Dixwell, was also interested in trees and had formed on his estate in Jamaica Plain a collection of trees which had in the middle of the last century few equals in Massachusetts. Mr. Emerson therefore, was naturally supported by his fellow trustee in his idea of using the Arnold money to establish an Arboretum, and between them they made in 1872 an arrangement with Harvard University by which they turned over to it the Arnold bequest, the University in return agreeing to devote to the Arboretum a part of the farm in West Roxbury which had been left to it by Benjamin Bussey to be used for a Farm School. This agreement provided that the University should grow on this land every tree and shrub able to endure the climate of Massachusetts. One hundred and twenty-five acres of the Bussey Farm was at first included in this arrangement and several years later the University added seventy-five acres more to the Arboretum, the area of which was further increased, as will be explained, by the City of Boston.

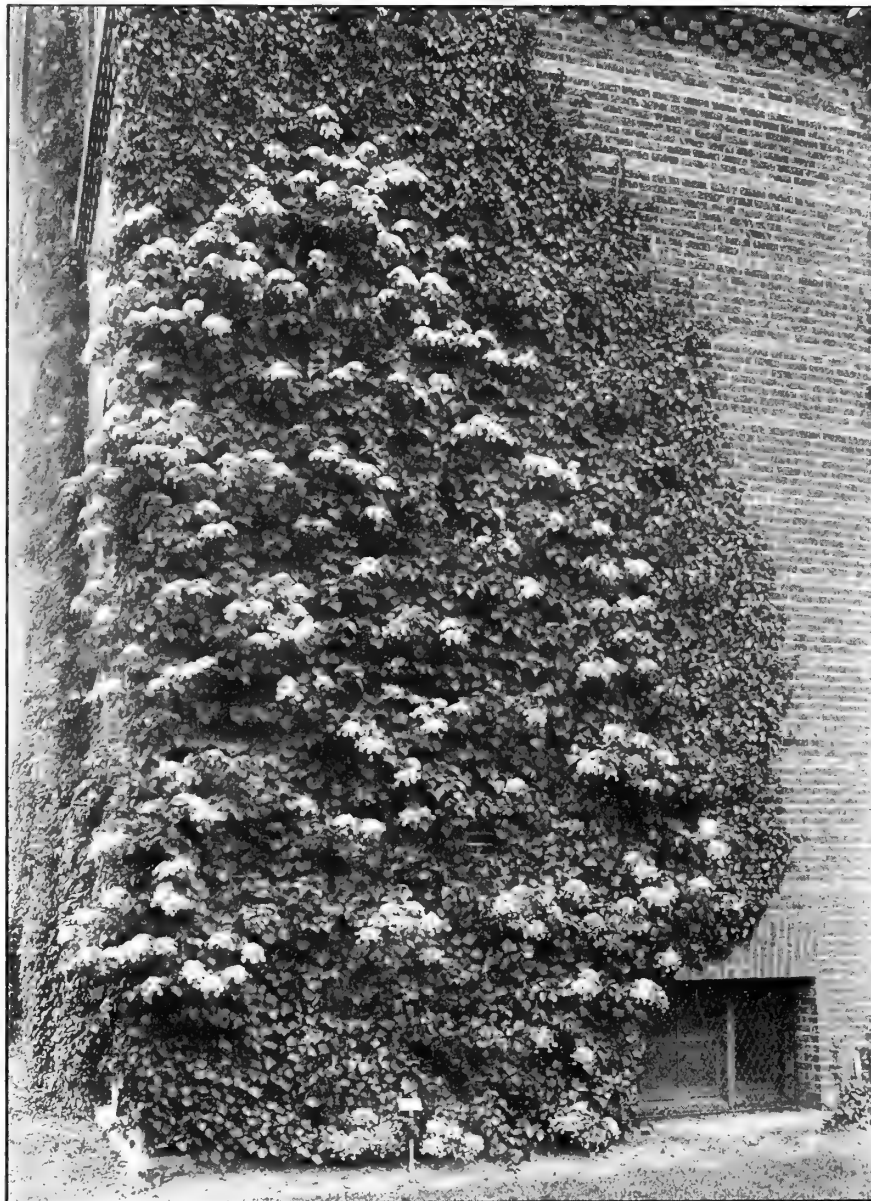
It is safe to say that none of the men directly engaged in making this agreement had any idea what an Arboretum might be, or what it was going to cost in time and money to carry out the agreement to cultivate all the trees and shrubs which could be grown in Massachusetts, and certainly none of them were more ignorant on these subjects than the person selected to see that this agreement was carried out. He found himself pro-

vided with a worn-out farm partly covered with native woods nearly ruined by pasturage and neglect, with only a small part of the income of the \$100,000 available, for it had been decided by the University that the whole income could not be used until the principal had been increased to \$150,000 by accumulated interest. He was without the support and encouragement of the general public which knew nothing and cared

Legislature having been obtained to such an arrangement, a contract was made between the University and the City which permitted the Park Commission of Boston to seize by right of eminent domain the land devoted to the Arboretum and then to lease back to the University for one thousand years all this land, with the exception of that to be occupied by a system of drives and walks which were to be built by the City after plans to be prepared by Mr. Olmsted and which were to be maintained by the City during the period of the contract. The City further agreed to add to the Arboretum land necessary for carrying out Mr. Olmsted's plan for the roads, to protect the Arboretum by its police and to assume any taxes which might be levied on it during the period of the contract. On its part the University agreed that the Arboretum should be open to the public every day during the continuance of the contract from sunrise to sunset. The City was slow in building the roads, and it was not until 1885, that the planting of trees in their systematic arrangement was begun.

Among the things which have made the Arboretum what it is the most important is this contract with the City of Boston which assures its permanency in its present position and frees it from the danger of taxation. Next in importance was the invitation which I received in 1879 from the Government of the United States to prepare in connection with the taking of the Tenth Census a Report on the Forest Wealth and the Forest Trees of the United States. In preparing this Report I was able to visit all parts of the country and to employ as assistants the men who at that time were best acquainted with North American trees. Many of these men became actively interested in the Arboretum, and the collections which they made as a basis for the Census Report laid the foundation of the Her-

barium and made it possible to add to its collection of living plants many rare North American trees and shrubs. This Government work gave to the Arboretum a certain national standing and recognition which has been useful to it. It led to the formation and arrangement by the Arboretum of the great collection of North American woods in the American Museum of Natural History in New York, and it made it possible to prepare here "The Silva of North America" and other publications on American trees.



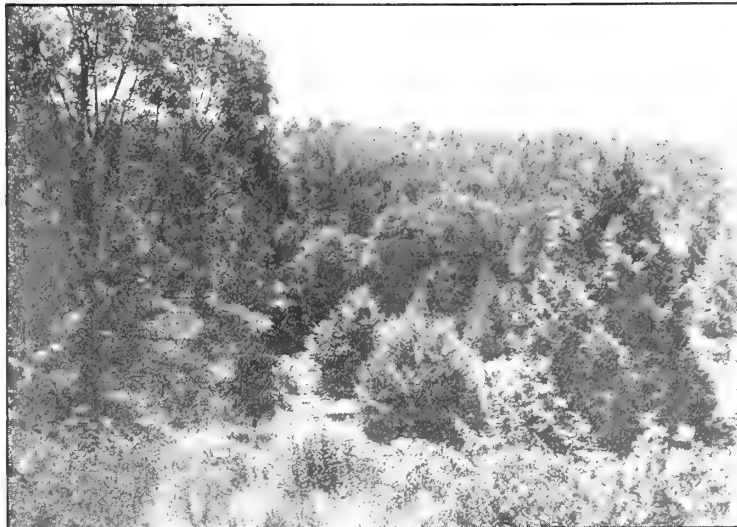
Climbing Hydrangea (*Hydrangea petiolaris*) introduced by the Arboretum is the only hardy woody vine with conspicuous flowers which can cling firmly to a brick wall. On the Administration Building

less about an Arboretum and what it was expected to accomplish.

Fortunately the late Frederick Law Olmsted became interested in the project and suggested that the City of Boston might well include under certain conditions the Arboretum in its park system. This plan met with little favor and was strongly opposed by the University and the Park Commission of the City, and it took five years of exceedingly disagreeable semipolitical work to bring it about. In 1882, however, the consent of the



This view across the Juniper collection illustrates the method of grouping allied plants for easy comparison



Looking across the Beech collection toward the Hemlock Hill clothed with a native grove and fronted with Laurel

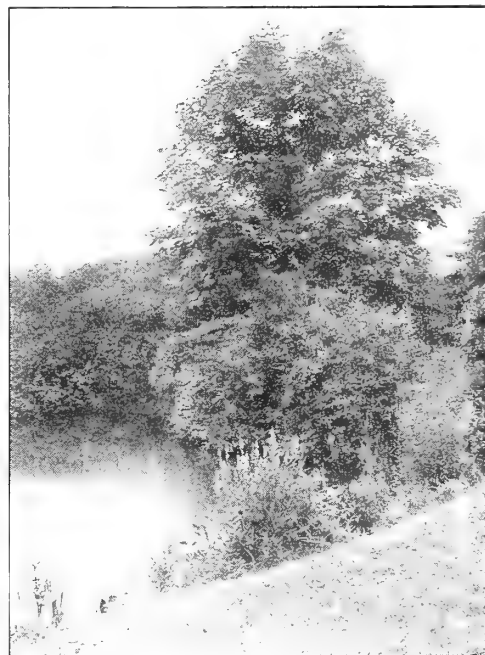
Views in the Arnold Arboretum



Seeds of a hardy form of Cedar of Lebanon were collected for the Arboretum on the Anti-Taurus Mountains in Asia Minor in 1901. The plants have never suffered from the cold



In the collection of Crabapple, *Malus theifera* is conspicuous for its open branching habit



Acanthopanax (*Kalopanax ricinifolium*) from seed collected in Japan in 1892. Tree is now thirty-five feet tall. Has clusters of white flowers in July



The main roadway through the Arboretum is a succession of remarkable groups and individual plants. The Forest Hill Road; Cherry collection on the left with the largest plant of the Sargent Cherry in the United States in foreground; Crabapple collection on the right

When the President and Fellows of Harvard University bound themselves in return for Mr. Arnold's \$100,000 to grow every tree and shrub which could endure the climate of Massachusetts they committed themselves to an undertaking the difficulty of which could not have been foreseen, for when they made this agreement with the Arnold trustees a comparatively small number of the plants now growing in the Arboretum had been cultivated or even discovered. The last forty years has seen great activity in botanical exploration for the discovery and introduction of new trees and shrubs, and in the creation of new forms by the art of the hybridizer. In such work the Arboretum has played a not unimportant part. After North America eastern Asia has been the principal field of its activities, for the trees and shrubs of northeastern Asia, next to those of northeastern North America, are best able to adapt themselves to the climate of New England. The Arboretum's first direct transaction with eastern Asia was in 1878 when William S. Clark, who had left the presidency of the Massachusetts College of Agriculture at Amherst, to establish a similar institution at Sapporo in northern Japan, sent a small collection of Japanese seeds to the Arboretum. From these seeds were first raised in America the Japanese Tree Lilac, *Syringa japonica*, *Cercidiphyllum*, the largest tree in Japan, the two climbing Hydrangeas, *H. petiolaris* and *Schizophragma hydrangeoides*, *Phellodendron sachalinense*, *Magnolia kobus*, var. *borealis* and other interesting plants.

In 1882 Dr. Bretschneider, the learned physician of the Russian Embassy at Peking,

sent to the Arboretum a small collection of seeds which proved one of the most important gifts it has ever received. From these seeds there were raised here, among other plants, three Lilacs of first-rate importance as garden plants. *Syringa pekinensis*, *S. villosa* and *S. pubescens*, the single-flowered form of *Prunus triloba*, *P. tomentosa*, *Crataegus pinnatifida*, *Fraxinus Bungeana*, *F. chinensis*, var. *rhynchophylla*, *Rhododendron mucronulatum*, *Philadelphus pekinensis*, *Quercus variabilis*, *Celtis Bungeana*, *Tilia mongolica*, *Pyrus betu-*



These two pyramidal forms of our common Maples should be of some landscape value. Sugar Maple on left with Red Maple, rare, on right

laefolia, *Hydrangea Bretschneideri*, *Betula dahurica*, *Lonicera chrysantha*, *Ostryopsis Davidiana* and other valuable plants.

It was the success in Massachusetts of the plants raised from the Bretschneider seeds that turned my attention to the importance of more thorough botanical exploration in China than had yet been attempted and led to the Wilson expeditions to central and western China. These were undertaken first by a London nurseryman at

the suggestion of the Arboretum on lines proposed by it, and later by the Arboretum itself. Mr. Wilson's travels have greatly increased the number of trees and shrubs which are now cultivated in the United States and Europe and have made the Arboretum the best place for the study of the ligneous vegetation of eastern Asia.

In addition to the plants raised from the seeds sent by Colonel Clark from Sapporo the Arboretum had been able in its early years to gather together a number of plants sent to this country from Japan to Francis Parkman, the historian, and to the Parsons' Nursery at Flushing, New York, by Dr. G. R. Hall and by Thomas Hogg, and Japanese plants were growing so well here that I went to Japan in the summer of 1892 in the hope of increasing the collection of Japanese plants in the Arboretum. As a result of this journey the Arboretum was able to add to its collections all the deciduous-leaved Japanese Oaks, *Ulmus japonica*, *Fraxinus longicuspis*, three species of *Enkianthus*, two new Crabapples, *Buxus japonica*, *Abies sachalinensis*, *Prunus Maximowiczii*, *Tilia japonica*, *Acer capillipes*, *A. nikkoense*, *A. Miyabei*, and *A. diabolicum*, *Carpinus cordata*, *Juniperus rigida*, *Ostrya japonica*, *Rhododendron Kaempferi*, *R. japonicum*, *R. rhombicum* and several other trees and shrubs principally from the northern island which had escaped the attention of earlier travelers in Japan in search of the seeds of native plants. In the autumn of 1905 Mr. J. G. Jack of the Arboretum staff passed a few months in eastern Asia and, although he was only a short time in Korea, made a collection of seeds there and in northern China from which several plants of interest and beauty entirely new to cultivation were raised, including *Rhododendron poukhanense*, *Indigofera Kirilowii*, *Evodia Daniellii*, *Quercus aliena*, *Diervilla florida venusta*, *Periploca sepium*, and *Rosa Jackii*.

The Arboretum endeavors to increase the knowledge of trees by arranging the living plants in what may be described as a Tree Museum. This Museum, which now contains one of the largest collections of trees and shrubs of the Northern Hemisphere in the world, occupies two hundred and twenty



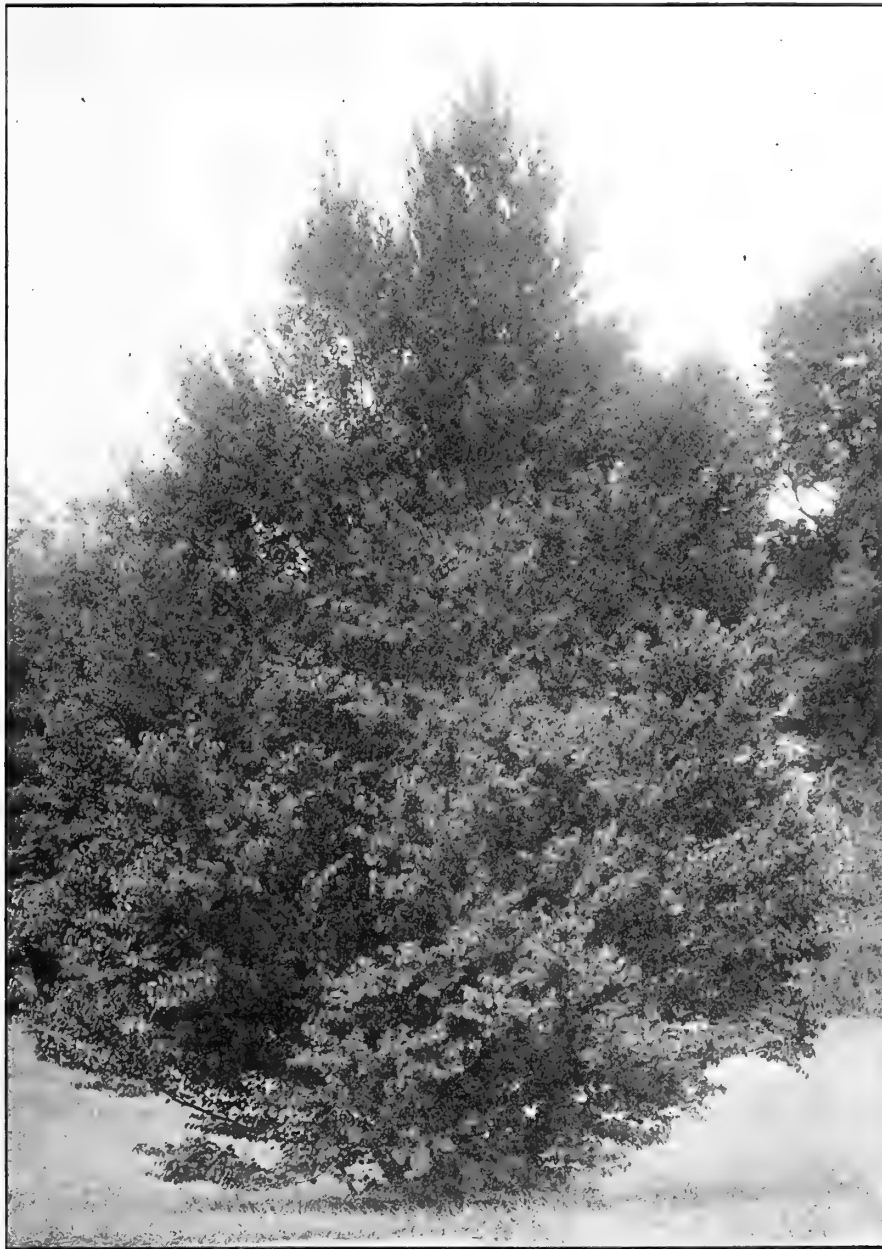
Cotoneaster hupehensis which Prof. Sargent considers to be the best of all the shrubs introduced by Wilson for New England. Deciduous, laden with white flowers in spring

acres of hill, valley and meadow contributed for the purpose by the University and in small part by the City of Boston. Part of this land is occupied by good native Oak woods and by a fine grove of Hemlock trees which cover the steep slopes of what is called Hemlock Hill, the crowning feature of the Arboretum. On the remainder of the ground the trees have been arranged in family groups and in botanical sequence, all the species of each genus being together. In the case of important native trees several individuals have been planted comparatively near together with a single individual of the species sufficiently far from any other tree to make possible its free and full development. For the trees of other countries only space has been found for a single individual of each. Hardy shrubs are arranged in parallel beds on the only piece of level ground in the Arboretum near the Forest Hills entrance. This arrangement has been adopted that students who want to see and compare the species of a genus of hardy shrubs can do so easily and in a short time. Everywhere else in the arboretum the attempt has been made to so group the trees and shrubs that the natural features of the place may be preserved, and that, although a person going along the drives can see close to the road a representative of every genus of trees in the Arboretum, he can do so without being unpleasantly impressed with the idea that he is in a systematically arranged botanical garden. A visitor, however, who sees only what can be seen from the drives gets little idea of this museum and its collections which must be studied from the grass-covered paths which lead the student to all the groups and to the principal points of interest and beauty.

More important for the increase of knowledge than the cultivation and convenient arrangement of living plants is the work which is carried on in the laboratories of the Arboretum, for comparatively few persons can study and enjoy these growing plants; but from the laboratories material and information reach far beyond the boundaries of the United States. There are two departments of these laboratories, first the nurseries and second the herbarium and library. In

the nurseries have been raised nearly all the trees and shrubs which now form the outdoor museum, and from them hundreds of thousands of rare plants, or plants entirely new to cultivation, have been sent out in exchange for other plants, to be tested in almost every civilized country of the world. In these nurseries, too, have been produced by hybridization a few plants of considerable value. The Arboretum has been fortunate that its nurseries from their beginning until a year ago were managed by Jackson Dawson, a man of genius who gave to the Arboretum his enthusiasm, his imagination, and unsurpassed knowledge of plants and their propagation. The work of Jackson Dawson was one of the principal factors in the successful creation of the Arboretum and in extending its usefulness, and in its success he found a happiness which is not given to many men.

In the library and herbarium the material gathered by agents of the Arboretum is studied, and in its library have been prepared the books through which the information about trees collected by the Arboretum has reached the public. The library commenced in 1873, now contains 31,000 bound volumes and 8,000 pamphlets, and on its shelves are to be found all the principal books in all languages relating in any way to trees, their uses and cultivation. The herbarium, the foundation of which was laid by the agents of the United



One of the most noticeable trees on the driveway is *Cercidiphyllum japonicum* which is the largest tree in Japan. Thrives in North Eastern America

States Census of 1880, has grown and is growing steadily. It is rich in the ligneous plants of North America, and of China and Japan. Those from other countries are fairly well represented, and it is the purpose of those who now administer the Arboretum that this herbarium shall eventually provide material for the critical studies, begun in North America and continued in Japan and China, of the trees of all other countries.

Only a few years have been necessary to make the Arboretum what it is to-day, and if we pass in imagination down the centuries during which it is to occupy the ground in Boston it now occupies, it will not be difficult, judging the future by the accomplishment of a few years, to picture an establishment able to increase human knowledge and human happiness in all parts of the world.

The foundations for such an establishment have already been laid. The position of the Arboretum as a scientific station is now recognized. It has many friends who believe in its value, and it has attracted and retained for many years a staff devoted to its interests; and nothing now but insufficient space in which to expand, and insufficient money to make possible the work the centuries will impose on it, can prevent the realization of the dreams of those who have found their life's work in preparing the way for a great scientific and popular establishment of far-reaching influence.

Electricity For Heating Frames W. C. McCOLLOM

A PRACTICAL AND ECONOMICAL METHOD WHERE NO REGULAR HEATING PLANT EXISTS.—POSITIVE FACTS IN VIEW OF RISING COSTS OF NATURAL HEATING MATERIAL

NEVER heard of such a thing!" Probably not. I don't even know that any one has actually done it; but in view of the increasing difficulty of obtaining natural heating material, stable manure, the scheme may not be so impractical after all. Let's look at the facts. The price of electricity is tending downward while the price of stable manure is rapidly increasing; and in many localities it can hardly be procured under any circumstances. Then why not use electricity for heating hot beds since its cost is not prohibitive?

The great advantage in using electricity is that we can instantly regulate the heat of the bed according to the weather. At four o'clock

it is mild; at nine it is freezing briskly. Accordingly we turn on our switch and the hidden forces of our cleanest and most satisfactory of all heating mediums are set in operation giving us the required degree of heat necessary for the development of the plants in the bed. Just think of it! No manure to cart away; no digging up and littering of the entire surroundings nor the disadvantage of having heat when it is not wanted.

Heating frames by electricity is really a very simple thing. All one has to do is to attach a supply cable of sufficient size from the point of intersection with the main feed cable to heaters which are placed in the frames at equal distances from each other. These heaters which

are made of castings of metals or a composition of metals that offer resistance enough to the electric current to generate heat are not more than one half inch thick and have small lugs at the corners to keep them from coming in contact with the supporting rear wall to which they are attached about six inches above the ground line inside the frame.

The Question of Cost

BASING our calculation of cost on a frame six feet wide and fifty feet long with one foot of exposed wall in front and two feet in the rear, the customary way of building frames, we get a total of \$80.00 divided as follows: Three heaters of the gridiron type,

ten by fifteen inches and of four hundred and forty watt capacity, \$15.00 each, \$45.00; one hundred feet of feed cable at 25c. per foot, \$25.00; and \$10.00 for the installation of the plant. The cost would be considerably lessened, proportionately, on larger sized frames and somewhat increased on smaller units.

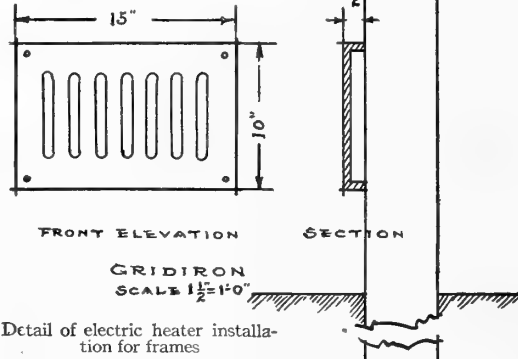
To raise the temperature fifty degrees in a frame of the size mentioned above will require about one hundred and ten volts or thirteen hundred and twenty watts, a consumption of approximately one and one third kilowatts per hour. The cost per kilowatt varies to such an extent that it will be necessary to strike an average of say ten cents which is rather high but will do for the purpose of comparison. Using the heat from six o'clock in the evening until six o'clock the following morning will consume sixteen kilowatts at a cost of \$1.60. If the amount of heat required is less than fifty degrees the cost will be proportionately lower.

Let us assume that it will be necessary to raise the temperature the maximum, or 50° for twenty nights during the time the frames are in service, or the current consumption would be the same for a 35° temperature for thirty nights. In either case the cost will be about the same, \$32.00 for electric current for the season. To be on the safe side let us assume that we will need the heat for twice the periods mentioned above. The cost for the season will be \$64.00 for operating expenses—but that is an extravagant margin, and would not be reached.

Taking this high figure, however, compare the cost of electricity with the expense of manure as the heating medium for the hotbed. In order to obtain the amount of heat necessary there should be three feet of manure in the pit or a total of thirty-four cubic yards. At \$1.50 per cubic yard, a very low estimate, it will cost \$51.00 to fill the frame with manure. After the heat is expended the manure will have to be carted away and this will be an additional expense. Keeping in mind the fact that manure is getting more and more expensive and electricity cheaper and cheaper there is no great difference in the cost of the two mediums.

There is no doubt as to the practicability

of making use of electricity to heat hotbeds, and in fact, it is more desirable than stable manure. With hotbeds heated by manure we often find soft, spindly plants, caused by intense heat when it is not required and it is a well-known fact that more plants are destroyed in a hotbed by too much heat than



Detail of electric heater installation for frames

are killed by cold. In using electricity as the heating medium the temperature can be regulated according to conditions; the three heaters referred to above will distribute the heat equally and by increasing or decreasing the power no one unit is entirely cut out but the heating power in each is simply increased or decreased as desired.

Old Time Disadvantages

ONE of the chief disadvantages of the old fashioned hotbed is the excessively moisture laden atmosphere caused by the decomposition of the manure. For this decomposition the manure must contain moisture and this moisture must evaporate. There is only one way that it can find its way to the air and this is through the hotbed. This means that the moisture is continually rising and carrying with it the fumes of ammonia which are not directly advantageous to the growth of the plants. When the frames are closed the glass is at once coated with moisture which excludes the light and causes the plants to get soft and spindly.

Other Plans That Economize

OFTEN it is desirable to use frames in the fall for the storage of certain plants until they are used or disposed of in some other manner and here again the electrically heated frame will serve as we have no heat to apply, no preparations to make. Simply a turn of a switch and the frame is ready!

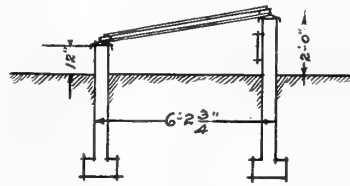
There is no danger attached to the electrically heated frame. The heat is rarely used when any one is working around the frame and even then it would be almost impossible to get at a point where one might get a serious shock although one might get a burn by coming in contact with the heaters. In order to avoid this danger a cheap guard of some kind can be placed over them.

A frame properly fitted out should last a life time. No particular care is necessary and there are no expensive items of up keep. The cost of installation plus the cost of operation will doubtless deter many from trying the experiment but I venture to prophesy that eventually the electrically heated hotbed will be popular, especially on places that generate their own current. These places always have a surplus of power at night when the heat in a hotbed is most required.

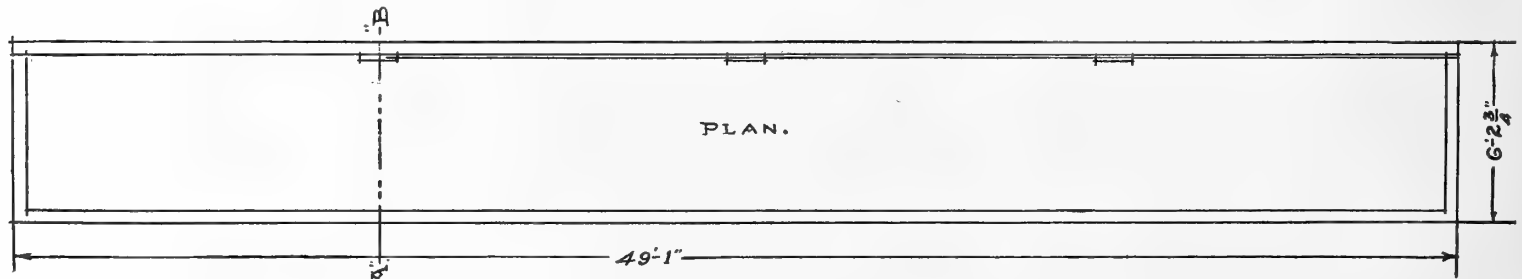
When hotbeds can be located near the house, garage or greenhouse electric heating would not be economical as in such a case it would be far more practical to install a small main from the heating unit in the building. It is only where the frames are more or less isolated that electricity is to be recommended.

Using Fresh Vegetables Wisely

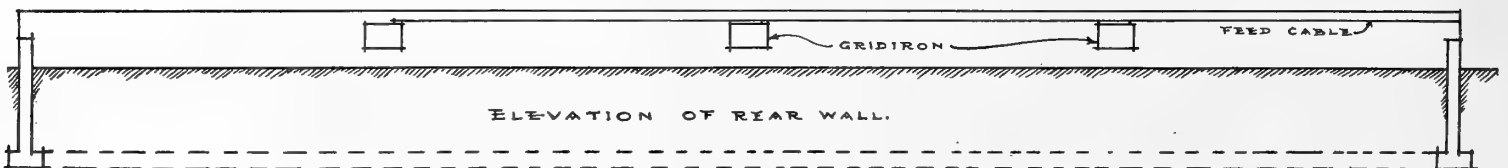
THE housewife's desire to manifest her patriotism by food conservation may be expressed in her willingness to revise, not alone her meal plans but her culinary practices as well. Accordingly she will cook all vegetables in the skins, regardless of how they may be finally prepared for the table. Steaming will in large measure replace boiling when she realizes that the loss of mineral salts by boiling is from three to five times as great as when vegetables are cooked by steaming. She will not be tempted to live out of the tin can because of its convenience. Rather will she regard the canned vegetables as a supplementary or emergency form. It may be called to mind that out of about thirty common vegetables twenty are stored in the fresh state.



SECTION "A-B"
Section of frame at the line AB below



STANDARD 16 SASH HOT BED FRAME
SCALE 1/4" = 1'-0"



ELEVATION OF REAR WALL.

Plans for equipment of frames for heating by electricity. It is a convenient method where no regular heating plant exists

Little Chat on Greenhouse Heating

J. N. MacARTHUR
Heating Engineer

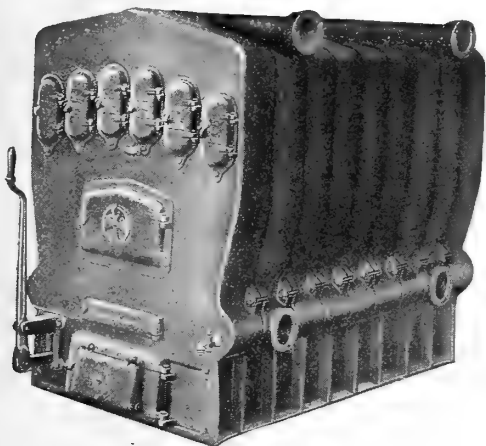
NEED FOR HIGHEST EFFICIENCY IN HEAT PRODUCTION—HOW THE GREENHOUSE BOILER BECAME SPECIALIZED AND TYPES THAT FIT SPECIAL PURPOSES

SOMEbody, somehow, somewhere, came to a hasty conclusion about greenhouse heating; and then proceeded to spread it broadcast as a conclusive conclusion. The conclusion was that the heating of a greenhouse was a most vexatious problem; one as yet to be satisfactorily solved. In that word "satisfactory" it turns out was mainly the question of coal burned.

Evidently, it loomed up as a great bugaboo, quite as the question of gasolene used to, with automobile owners. But what boots it, if gasolene does cost 30 cents a gallon instead of 20, if with improved engines and carbureters, you get an equivalent increase in power and mileage?

Whether it is a question of greenhouse coal, or an auto's gasolene, it all simmers right down to the basis of getting proportionate returns for your expenditures.

There is a man up at Port Chester, N. Y., who has a greenhouse 18 by 50 feet, who grows on the side bench enough spring bedding



The modern square sectional type of greenhouse boiler. It is easy to install, to repair, and to operate. And easy on coal. All clean-out doors, dampers and other operating parts are entirely on the front.

plants that he sells to his neighbors to entirely pay for the coal he burns.

But like the auto again, the genuine 100 per cent. pleasure you get out of it, is so far and away ahead of the money you put in it, that it's overshadowed.

But you can burn a needless amount of coal, just like you can use an unnecessary amount of gasolene. The boiler might be termed the carbureter of the heating system. Just as a special type of carbureter must be devised for each type of engine, so should a greenhouse be heated by a specially designed greenhouse boiler.

Next to all out-doors, and church lobbies, the greenhouse is the most difficult thing to heat. When you think of that thin film of glass, not more than an eighth of an inch thick, which is the only thing between the flowers inside and the zero weather outside, you wonder it can be heated at all.

Talk, for instance, with the owner of those huge commercial Rose houses, covering, not so many square feet, but acres; and you will be surprised to learn the small amount of coal required to heat them, compared with other buildings. Due allowance, of course, being made for the great difference in structural material.

Now consider the fact that in residence

heating the pipes are run vertically. This gives every advantage of the force of gravity to insure the return of the water to the boiler, and so make the circulation both rapid and free from air pockets.

Now compare greenhouse heating, with its pipes running horizontally under the benches, and you at once see why it is that a boiler that may economically heat your house, is not successful for your glass enclosed garden.

In reverse, however, you at once appreciate that a boiler which is economical for greenhouse heating, is exceptionally so for all other purposes too.

Contrary to your impression, perhaps the evolution of the greenhouse boiler reads quite like a fairy tale.

Like every worth while thing, its inception started with one man. In this case, it was an enthusiastic lover of flowers, an Englishman who came to this country, following the lure of larger opportunity.

In those days, more than 60 years ago, before the day of steam or hot water adaptation, greenhouses were heated in what now seems a ridiculous way. A sort of stove or furnace was bricked in at one end of the greenhouse and the chimney or flue carried along under the centre of the house to the other end; where it ended in the chimney proper. This flue was made of brick and tile. The heat radiating from it warmed the house excessively at one end, and in opposite proportion at the other. Incidentally, it often leaked gas, killing the plants.

Of course, such a heating method devoured coal most discouragingly.

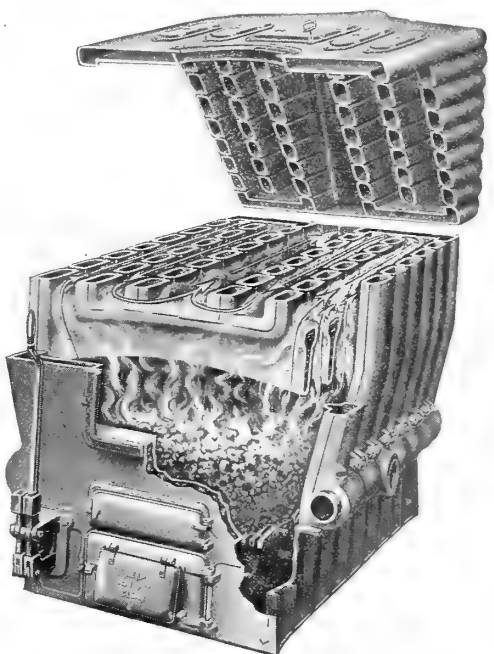
Our English flower lover, who was also a heating engineer, seeing his opportunity, designed a sort of half furnace, half boiler, by putting a water jacket around part of it. From it, he ran hot water pipes down one side of the house, and the brick flue down the other. This gave a more even distribution of the heat,

and also placed it at the sides of the house, where it was most needed.

But still it was at best a one-sided proposition, all being in favor of the hot water side.



The latest improved type of round sectional boilers used for heating greenhouses of moderate size. It has all the economy advantages of its brother, the square sectional.



Cutting the top off the square sectional boiler like you would a boiled egg and cracking off some of the side makes its construction clear. The fire comes into the upper story through the side flues, between each section. Then it starts back and forth on its three time passage or fire travel. It is this long fire travel that has much to do with its short coal bill. See the illustration of a single section.

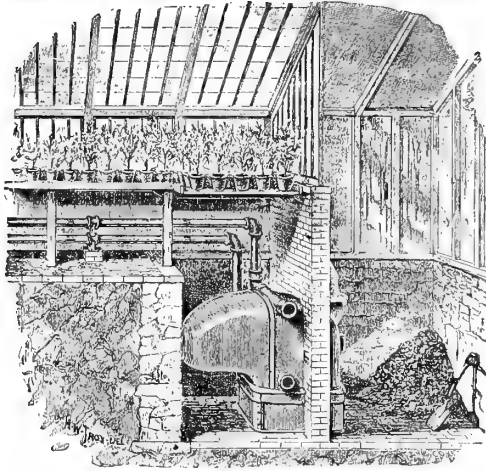
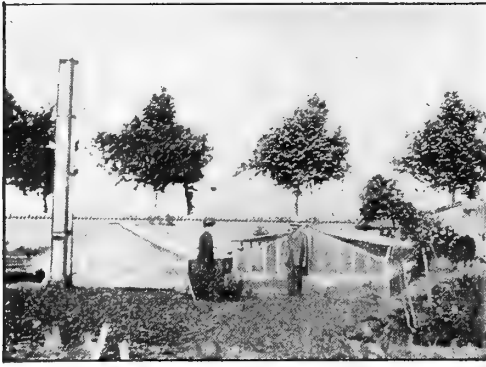
So next he designed a regular, full-fledged boiler in which instead of having the fire and hot gases simply heat the water that was only directly over the fire, as it does in a tea-kettle, he made a water jacket hump or V-shaped extension on the back. Back and forth through this water-jacketed extension, the flames, hot gases, and smoke had to pass before they could go out from the smoke box and up the chimney.

This so increased the efficiency that with the same coal, three houses of the same size could be heated instead of one. Pipes were used on both sides of the house and the chimney flue carried directly from the boiler through the roof, like any rightly behaved chimney.

For the first time it was possible to heat all parts of the house uniformly and, by putting valves on the pipes, have full control of the heat distribution.

Not to this very day has there been designed a boiler that surpasses this hump boiler for economy.

But as houses grew larger, it became a problem to cast the big humped boilers needed. It was also difficult because of their size, to handle them when installing. And so it was that one of the pioneers in greenhouse building determined to design a boiler that had all the advantages of the hump one and none of its limitations.



Greenhouse of M. Pernet, the well known French rosarian. Heated in the old-time way with a brick flue running under the centre bench from the furnace at one end, to the wooden chimney at the other

Taking the sectional book-case as an inspiration, he made a sectional boiler of two designs. One, square shaped, in which the sections were placed side by side. The other was round, with the sections put one on top of the other.

In them, he combined the twice back and forth passing of the gases and smoke, as in the hump boiler; and then added another passage or flue, making a three times back and forth. As a result, so thoroughly was the heat extracted by the water in the boiler, that the smoke pipe was cool enough to put your hand on it.

But still more improvements were to come. The part directly over the fire, corresponding to the bottom of the tea-kettle, was made in corrugations or loops, each section forming a part of the loop. This gave still more economy, because it gave more heating surface for the flames to directly heat.

To prove to yourself how this is, just lay a string on the table in loops, like in the sketch alongside. Say the distance across all the loops measures two inches. Now pull the string out straight and it measures close to six inches.

If tea-kettle bottoms were made in corrugations like a greenhouse boiler, they would boil in a third less time. Strange, isn't it, that someone doesn't make them that way?

But to get back to the square sectional boiler, it really has two stories. The lower one contains the fire; in the upper one, are the flues through which the hot gases pass back and forth between their water-surrounded walls.

Now consider that the top, sides, front and back of the lower story are water surrounded, as well as every one of the passages in the upper one; and you can see that this boiler is like a big sponge, greedily drinking up the heat and sending it with great circulating

force, into the greenhouse, in the form of hot water or steam.

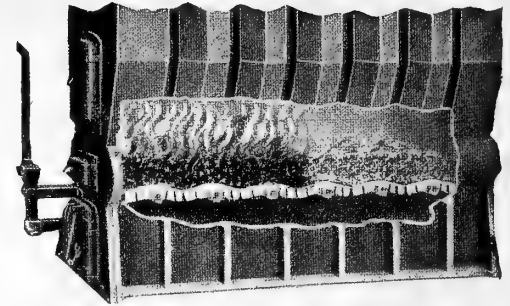
Perhaps this is now as good a place as any to talk about "hold-ups"—the kind that in boilers mean a slumber fire. The kind that holds up its end when there is little to do; and is always ready to do more, when more is to be done. Which statement needs explaining.

We have reference to the way this boiler's grates shake part at a time, so that you can in mild weather put ashes on part of them, and run the fire on the other part. It's just like having a little boiler inside the big one. It is decidedly more economically and easily managed than the big fire, which—in your endeavor to keep it low enough, frequently goes out?

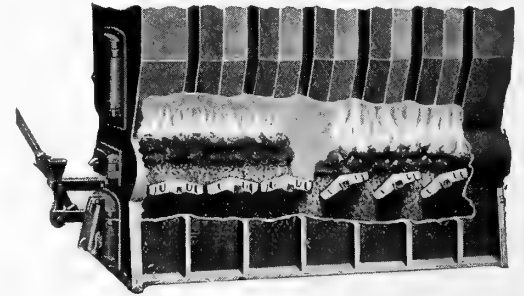
And now a word more in general about sectional boilers. They are easy to handle and set up. The sections will go through practically any door and down any ordinary cellar stairs. In case anything happens to any of the sections, only that one section need be replaced. As you enlarge your house, simply add more sections to the boiler just as you would add more sections to a book-case.

Such boilers are made for either steam or hot water, but by far the greater number of greenhouses are hot water heated. It is a more equable heat than steam. It has none of its intensity, none of its being either all on or all off, and so requiring much attention to preserve the uniform temperature so essential for greenhouse success.

But let me caution you to make sure your boiler and heating pipes are rightly proportioned, both in relation to each other and the requirements of the house. To heat a greenhouse of ordinary sound construction—that is, tightly glazed with double-thick glass—to a temperature of 55 to 60 degrees at night, when the mercury outside is at zero, you must have



In early fall or late spring, when only a little fire is needed, just bank the back half of the grates with ashes and run a fire on the front half. The grates shaking in two parts, makes this possible



The grates on the square sectional shake half at a time, which has two advantages. Shake easier, and you can stir up half the fire and let the other half slumber

one square foot of hot water radiation pipes for every three square feet of exposed glass and its equivalent.

No matter how fine a greenhouse or conservatory you may have, a "greenhouse boiler" is vital to its success. So do not experiment with ordinary furnaces; it costs too much.

A Neat Stake

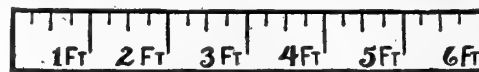
MY only objection to growing Lilies, Gladiolus, and Dahlias is that they usually need staking and I object to the conspicuous way in which the stakes show. Of course, I wouldn't be without these grand flowers even if I had to put up with the objectionable stakes. In the past I have used the bamboo stakes, that can be bought at most of the seed stores, and while they have some advantages over the usual rough stake, yet they failed to exactly suit. The past season I gave the subject some thought and finally devised a stake that seemed to answer my purpose, at least. The stakes of course, are of different lengths to suit the heights of the different flowers and the size of the stake will depend on the length. For a five-foot stake I found three quarters of an inch square about right. At some near-by saw-mill, waste material can usually be found that will answer the purpose first rate and may be had for very little money and sometimes for only the trouble of carrying them away. I next bore small holes beginning near the top and about eight or ten inches apart, down to about the middle of the stake. After sharpening the bottom end so it may be driven into the ground easily. I next paint the entire stake green and lay away to dry. Instead of using string to tie the plants to the stake I use green raffia, being more inconspicuous than the former. I at one time used tacks or small nails to keep the raffia from slipping down but found them more or less in the way and they were continually catching on different things. The holes have no bad points. If the stakes are stored under cover during winter and occasionally re-painted there is no reason why they won't last for a good many seasons.

Toledo, Ohio.

WALTER J. WAIT.



This is one of the square boiler sections. The window-like openings are where the fire, hot gases and smoke travel back and forth on their journey three times the length of the boiler, on the way to the smoke pipe and chimney. The frame of the windows is hollow and filled with water. The round port holes are the openings through which the water flows from each separate section to the other



These sketches, go to prove that a kettle with a corrugated or looped bottom has the same quick heating space that a flat bottomed one has, three times the width. On this fact is based the use of corrugations in the fire box top of greenhouse boilers

The Greenhouse That Isn't Heated

W. N. CRAIG
Brookline, Mass.

MAY BE EXPENSIVE ECONOMY—PROFITABLE CROPS THAT CAN BE GROWN UNDER GLASS WITHOUT FUEL—HELPING THE FOOD SITUATION

COAL scarcity, to say nothing of the possible price, is a present menace to the gardener this year. It is a big problem what to do with the greenhouse. Shall it be operated regardless of cost? Can it be started and the risk taken of not being able to get an adequate supply of fuel? But withal the case is not so alarming as it was only a few years ago. During that period very few greenhouses actually were closed down in the winter and where coal was not available cord wood was used for many months to keep frames running.

As a plain matter of practical common sense the closing down of the greenhouse should be looked at as a very serious solution of the problem. Closing down has many and costly disadvantages. A greenhouse kept in operation and kept heated during the winter comes through the cold weather in better condition than one that is left alone, unless it is elaborately protected by wire screens or board shutters laid over the roof. In the neglected house frost within will heave the brick piers supporting the pipes which ordinarily are put up with very little foundation. The heaving tends to throw pipes out of plumb and to "start" the joints. The resultant leaks are often costly to stop.

In the event of the greenhouse being closed for the winter it is advisable to protect the piers with a covering of straw, hay, or dry leaves; and indeed to lay this covering over the entire floor of the greenhouse. It is, of course, understood that all water is drained from heating pipes and boiler and that any cold water connections be cut off where danger of freezing exists. This work should be done during November. After March 1st the greenhouse should have a little artificial heat in order to bring on spring crops. Not much fuel would be needed during the day, unless

the weather is unusually cold, but some warmth should be kept in the pipes all night. By using a little fire heat then very much earlier crops will be assured.

NOT much can be had in the way of growing crops in an unheated greenhouse during December, January, and February. Yet we want to increase our food production as much as possible during the coming winter, and an unheated house will assist in this effort. If the house contains benches with sides these should be filled at once with a compost of well rotted manure one part, and rotted pasture loam or good garden loam three parts. On part of this sow rows of prickly spinach as soon as possible. Let the rows be 10 inches apart. This will soon germinate and will easily withstand the winter; give the surface a mulch of dry leaves after the middle of December.

You probably have lettuces in the garden which have not yet attained any great size; dig them up carefully and plant in a bench 8 x 8 inches apart. They will continue to grow for some time. Give them also a good mulch of leaves and they will pull through the winter unless it is unusually severe.

Are there any cauliflowers that are not headed up? Lift them carefully, soak well in water, tie the leaves together over the top, which will prevent them breaking and also protect the "flowers" and keep them white. Plant them in the benches. Dandelions make excellent greens in late winter. Secure a number of strong roots now and plant in the benches.

WHEN the power of the sun is increasing perceptibly, about middle of January, it will be safe to make sowings of garden peas, radishes, lettuces, and round spinach. Don't

worry about them because the weather is cold, for even if the soil on the bench freezes they will not be harmed, especially if a dry mulch of some kind be given. A month later you can sow more lettuces, beets, or spinach if the needed bench space is available.

A few luxury vegetables are easily to be had. Some old asparagus roots taken inside will yield a few early bunches. The roots can be dug now carefully and planted below the benches of the greenhouse covering the roots with two or three inches of soil.

If mushrooms are liked, a bed can be made below one of the benches. It will not produce through the winter but will give an abundant crop as the weather gets warmer. It will do the bed no harm even if it freezes solid. Use pure culture spawn, and a mixture of fresh horse manure three parts and loam one part. Allow rank heat to subside before making up the bed. Spawn when heat in the bed declines to 90 degrees, using portions of spawn as large as an English walnut and cover these two inches deep, 12 inches apart each way. Ten days after spawning spread two inches of loam over the surface and beat it firmly, then cover with hay and let alone. Manure just moist enough so that it can be squeezed together without water exuding is in the right stage. Pound this nine inches deep and the firmer it is made, the longer heat will be maintained and the better the crop."

FLOWERS are wanted early? Well then, sow Sweet Peas, Bachelor's Buttons, Mignonette and Marigold at the end of January. Dutch bulbs such as Tulips, Hyacinths, Narcissus, etc., if carried over in a cold cellar can also be brought into the unheated greenhouse late in February, at which time also it will be perfectly safe to start Hydrangeas, Lilacs, Rambler Roses, Deutzias, and other dormant deciduous shrubs or climbers.



A cool, or even cold, house can be used to grow the hardier vegetables earlier than the outdoor garden. Mushrooms may be grown under the bench

Getting the Garden Under Glass

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CHANGING THE BASE OF OPERATIONS FROM THE OPEN TO THE FRAMES AND THE GREENHOUSE FOR WINTER PRODUCTION—WHY DRAINAGE IS SO IMPORTANT INDOORS

EVERY good gardener, is quite naturally determined to have a better garden next year. The demand for good vegetable plants of all kinds will be even greater next spring than it was last, and any surplus of such plants which the foresighted gardener may have is sure to find a ready sale at good prices.

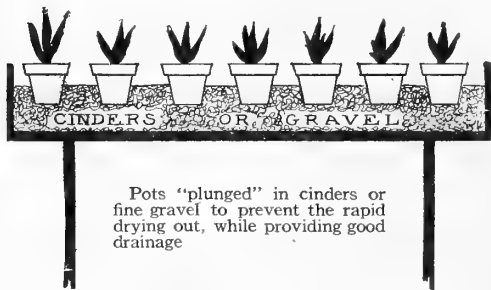
Not too Late to Begin Now

WHILE the gardener who is so fortunate as to already possess some frames, or a small greenhouse, has or *should* have winter crops already started, nevertheless, it is not too late for the new gardener to have a winter "war garden" as well as making sure of a supply of plants, both vegetables and flowers, for next spring's garden and flower beds, provided prompt action is taken. If a "ready made" frame, or a small greenhouse is ordered now, and the soil to go into them is prepared while you are waiting for it to arrive, you can still get two or three crops of winter vegetables before the plants to be grown for setting out in the spring will require much space. The latter are started in February or early March; but for six weeks or so, before they are ready to transplant, will occupy very little room. So you have practically all the space available in frames or greenhouse to use for a winter garden until April.

While it is no part of the present purpose to describe types of frames and greenhouses



Frame prepared on wet soil, with cinder base to secure drainage

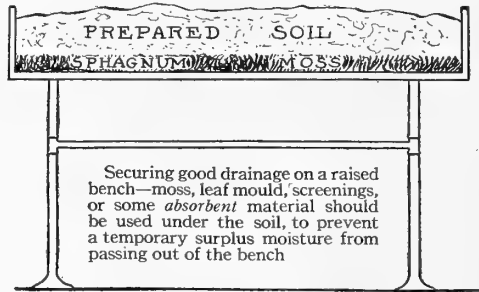


Pots "plunged" in cinders or fine gravel to prevent the rapid drying out, while providing good drainage

which may now be had "ready made" at reasonable figures; nevertheless, it will be in order to assert now that they are entirely practical. Note may be made in passing of the heat-conserving possibility of "double glazing" for both sash and small greenhouses. In double glazed work, there is a thin layer of air between the two sheets of glass which acts as a non-conductor, keeping the frames or house as warm as though there was a mat over it, and, at the same time admitting sunlight.

The first thing for the beginner at winter gardening to realize is that it is an undertaking distinctly different from gardening out-of-doors. While the same general principles of fertilizers, plant sanitation, etc., apply, yet the conditions are not at all the same. The first and most important difference is, that in gardening under glass, practically everything is "up to"

the gardener. If he does not water his plants himself, they will grow thirsty. If he does not attend to giving fresh air, they will soon fall a



Method of providing thorough drainage for solid greenhouse bed built on the ground

prey to disease. On the other hand, however, growing conditions are under his control and not subject to the vagaries of the weather.

Things that Need Attention

TOO often, the new gardener under glass looks for the cause of his troubles in the supposed wrong selection of varieties, or in having given a few degrees too high or too low a temperature, when in reality, even with perfect seed and growing conditions, he would have met failure because of mistakes made at the very beginning of his winter gardening operations. Pay heed therefore, to the controlling factors.

The first essential is drainage. If the soil be either too wet or too dry to furnish the proper conditions of growth, little progress can be made, and it is absolutely impossible for the plants to make progress, no matter what pains have been taken with all the other factors influencing their growth. Out of doors, drainage, even under unfavorable conditions, will, to some extent, take care of itself. Surplus water, if it cannot find its way down through the soil, will tend to flow off over the surface or will be decreased rapidly through evaporation. In the frame or the greenhouse, however, it is wholly subject to artificial control. Evaporation takes place very slowly, and if precautions are not taken the soil may remain in a soggy, water-logged condition, fatal to healthy growth, for days or even weeks at a time. And, unless he has been forewarned, the grower may not suspect what the trouble is!

The first step in making sure of satisfactory drainage is to provide an adequate means of escape for any surplus moisture before the soil is put into frames, benches or solid beds.

When frames, coldframes or hotbeds are built on soil which has a naturally porous sub-soil, giving good drainage, no further attention will be required than to see that the soil of the frame is thoroughly spaded or forked up and that no outside surface water can find its way into the frames, in the case of heavy rain or

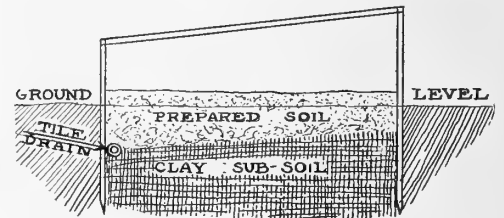


Plant raised above bench level to secure extra drainage and room

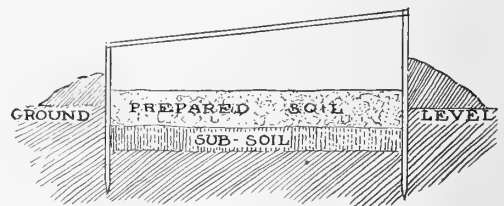
melting snow. The frame should be made in such a manner, that when the prepared soil is put in it, the level will be above the soil level outside the frame; or else protected from water outside by being carefully banked up. If, however, the ground upon which the frames must be constructed is low, a layer of cinders, several inches thick, should be placed in the bottom of the frame. On very low soil that is sure to be wet in winter or in spring, a long, low mound of cinders can be made and the frames built on top of this. Where the frame has to be built on a hard, impervious sub-soil, it can be dug out sloping toward the front of the frame, and a line of ordinary, loose jointed tile laid along the front, with a pitch to one end, to carry off the moisture. All these methods are illustrated in the accompanying drawings.

Drainage in the greenhouse is even more important than that in the frames. Here one is likely to encounter trouble in one of two extremes—the solid bed, usually, being so constructed that without the greatest care in watering it will be too wet; while the raised benches, on the other hand, are just as likely to dry out too rapidly and will therefore require frequent heavy waterings, and so suffer from being alternately too wet and too dry.

What has been said in connection with procuring good drainage in the frames applies, with slight modification, to the solid bed in the



Frame on clay sub-soil with slight pitch to end to provide drainage



Frame prepared on ordinary, level ground

greenhouse. Unless drainage conditions are very good, it will pay to put in cinders or other drainage material before filling in the bed with the planting soil, even if the latter contains a large proportion of manure. It is much safer to err on the side of too good drainage. A too light watering can readily be supplemented by another; but a heavy watering, with poor drainage, may cause damage that cannot be undone for days or even weeks.

One of the secrets of having small plants in pots thrive and grow rapidly, is perfect drainage—this applies with equal force to plants that are in a semi-dormant condition and, making little growth, require little water. Pots set on a bare, board bench are apt to get dried out entirely, or baked. If, however, the bench is filled several inches deep with small cinders or sifted ashes, and the pots are sunk into them half way, or up to the rim, it will be easier to keep them moist without having them too wet. They will also not be so likely to be

knocked over in watering, weeding, or in an accidental gust of wind.

Plant Foods for the Winter Garden

NEXT to drainage, both in importance, and in the actual operation of getting ready to plant, comes the soil. While a very rich good garden loam will answer the purpose, it is much better to prepare a special soil for winter use. To make this, procure from an old pasture or roadside, where the grass appears to be grown luxuriantly, pieces of sod several inches thick. Cut this up fine with a spade or an edger and pass it through a coarse screen; this gives a soil full of natural humus. If you can get sods which have lain long enough to rot until they will pass through a coarse screen, so much the better. If neither of these can be obtained, use clean, garden soil. Secondly, obtain some fine and very well rotted manure—if possible, containing a good percentage of cow manure. The older and more thoroughly decomposed this is, the better. Thoroughly mix together the soil and manure in the proportions of one of manure to two of soil, adding enough coarse sand so that the resultant mixture will be thoroughly "cut" by the particles of sand and so friable that it will fall apart readily, even when fairly moist, after being squeezed in the hand. If manure cannot be obtained, commercial humus, or leaf mould from the woods may be used in its place; and a pint or so of fine ground bone added for each bushel of soil. The whole must now be thoroughly mixed, preferably a week or ten days before wanted for use.

A soil thus prepared will serve as the foundation for practically all work under glass. As you become familiar with the requirements of the individual plants, and attempt to grow a larger list, you may want heavier soil for some things and lighter for others, but, if results with soil as thus prepared above are not generally satisfactory, you can look elsewhere than to the soil as the source of your trouble.

Preparation for Planting

THE next step is getting ready for planting. The soil in raised benches must be at least four inches deep, and the frames or solid beds preferably six or eight inches. Even with this depth of soil, the individual plant has much less space than it would have in the open ground. If manure has been used, the soil will be fairly rich. But, in addition to this, after the soil has been put in place, a good dressing of wood



Thoroughly mixing the soil ingredients before putting into the benches is quite important. Incorporate fertilizer at this time

ashes sprinkled over the surface, and raked in, will help to sweeten the soil and provide potash; a light dressing of bone dust, if none has been used in making the mixture, should also be raked in. If the soil is at all dry, it should be wet down thoroughly, soaked through and through—so it will have a chance to dry out sufficiently before the seeds or plants are put in place.

Throughout the season, the plants both in beds and benches and pots, while making active growth, will be benefited by a further application of plant food in the form of a light dressing of bone dust or tankage or nitrate of soda (the latter is most safely applied in solution, a heaping tablespoonful being used to a gallon or so of water), applied when the soil is fairly moist.

Fresh Air and Plant Health

THE one thing which the beginner is pretty sure to neglect is giving plants indoors as much fresh air as they need. A safe and simple rule is as follows: Give all fresh air possible, while maintaining the minimum of temperature.

This does not mean that the ventilator should be kept open or the sash raised during night and day as long as the plants do not freeze. The winter gardener should aim at giving his plants fresh air every day, preferably in the morning, so that the air in the frames or house will have a chance to warm up again from the sun before nightfall. On very stormy days, especially with sash, fresh air cannot always be given. Any air draughts that will directly hit the plants must be avoided. The frames or ventilators can be opened in such a way that the wind will not blow directly into them, i. e. on the lee side. It is better to have a moderate opening for several hours rather than to open up wide for a few minutes to "change the air," resulting in a sudden fall of temperature, followed by a quick rise.

Keeping the Plants Healthy

IN ADDITION to giving an abundance of fresh air and to keeping the soil watered frequently enough so that it is evenly moist, without ever getting absolutely dried out or wet enough to be soggy, the surface will, of course, be thoroughly stirred or cultivated frequently, both to admit air and to prevent the growth of weeds. Any plants grown in rows such as radishes or carrots, should be "thinned" even more promptly and carefully under glass than out of doors, because the conditions are more favorable to the development of disease or of weak growing plants.

Fumigate regularly, every week, or two weeks at the most, with tobacco dust or tobacco paper.

If you will take the slight trouble of doing this (and it takes only a few minutes each time) you will have a practically sure preventive against aphids and sucking insects of all kinds. If, by any chance, any of them do appear, they can be sprayed with a nicotine extract (aphine or Black Leaf 40), and fumigation given.

If care is taken to do the watering on bright mornings, so there will be much less likelihood of danger from "rot" of various kinds. All diseased leaves, dead plants, refuse and so forth will of course be scrupulously cleared up and burned at once.



Does double glazing "deliver the goods?" Well here are two lettuces grown under same frame conditions, but that on the right of picture was from double sash

Making Real Use of the Garden's Crops

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Fort Collins, Colo.

WHERE FRUITS AND VEGETABLES CAN REPLACE OTHER FOODS. COMBINATIONS FOR BALANCED DIETARIES

OF THE VAST quantities of perishable food stuff raised in the war garden efforts of the year ample supplies have been put into storage. The present problem is selecting and combining these foods that there may be brought about the most efficient and economic use of the products of the garden during winter. Fundamental to the attainment of that object is an understanding of the nature of fruits and vegetables and of the rôle they play in the diet.

As a first step study of the vital needs of the family to discover how under the present condition of limited food supply and unlimited prices, they may best be met, great knowledge is not necessary. If, then, the housewife can supplement that knowledge with skill in the cookery of fruits and vegetables, originality in combination and in serving, and in the observation of a few general rules or guides to practice, the problem of the three square meals a day will cease to be the proverbial bugbear to the household that has used its garden area wisely.

The study of food values and of food functions involves the use of a few unfamiliar terms, but those terms may be quite as readily comprehended as Chrysanthemum, Gladiolus, or Dahlia. We have already come to use with considerable freedom the terms protein, carbohydrates, and fats. The first named food principle, it will be remembered, is the tissue-building part of foods, that part which is found in large proportion in lean meat, eggs, milk, cheese, and in beans and peas. The carbohydrate group includes all foods rich in starch and sugar, and the best known representatives are potatoes, cereals, and sugars. Such foods we think of as energy yielders, or, in other words, as producers of heat and activity. Only in comparatively recent years has it come to be generally understood that very many of the fruits and vegetables, low in protein and carbohydrates and formerly used because of freshness and palatability, have large value as body regulating substances.

What Fruits and Vegetables Can Do

THE special function served by fruits and vegetables is fourfold. Because of its bulky residue it gives a laxative tendency. And again, because of bulkiness, fruits and vegetables are the more satisfying to the appetite. Within the last half dozen years this group of foods has come to be known as an important source of the very minute quantities of certain food accessories which are regarded as highly essential to growth. To such food accessories has been given the name *vitamines*. And it is significant that fresh fruits and fresh vegetables are more advantageous sources of vitamins than those same products preserved by canning or drying. The organic acids found in fruits and vegetables give to them pleasing flavors, exert a laxative effect and serve other useful purposes. The fourth function is that of supplying to the body the essential mineral salts. The mineral constituents of greatest importance are iron, calcium, phosphorus, potassium, sodium, sulphur, and chlorine. The average dietary is often lacking in these food constituents and, of the elements named, the first three cannot be safely left to chance. This discrepancy may be accounted for in the fact that the food selected has not included generous

amounts of eggs, legumes, whole cereals, fresh fruits, and fresh vegetables. *If each day's ration contained two medium sized potatoes, a serving of some other vegetable, and the equivalent of a medium sized apple in fresh fruit, the needs for mineral matter and of growth promoting substances other than protein would probably be supplied.* Special care should be exercised then to make sure that the dietary includes a generous supply of foods in which iron, phosphorus, and calcium do occur. Foods rich in iron are egg yolk, lean meat, spinach, fruits, and cereal grains. Generous use of milk, legumes, celery, cabbage, and cereals will insure an adequate supply of calcium salts to the body. Phosphorus contained in egg is considered to be more completely utilized than that derived from any other source; but beans, wheat, and oats also serve to supply that element. This is not to say that the foods named as the desirable source of supply of one mineral constituent do not also supply other mineral constituents. From the foregoing statements it is apparent that the group of vegetables known as legumes serve as a source of each of the three very important mineral constituents. Legumes include beans, peas, lentils, and soy-beans.

The Potato Substitute

AN UNDERSTANDING of the nature and amount of mineral constituents contained in the different food stuffs will enable one to correctly provide "substitutes" for the staple food products for which the present demand exceeds the supply. A case in point is the need for potato substitutes. Rice and other cereals and cereal preparations such as macaroni have come to be referred to as "the potato substitutes." In so far as we are concerned with the starch content, the foods named may be so regarded. Their inadequacy in other respects should be as well understood. In the digestion of foods there are set free alkaline salts known as base-producing elements and acid-producing elements. The perfect combination of foods is that in which there is at least enough of the base-forming elements to neutralize the amount of acid-producing elements set free, thus changing them to harmless compounds which the body then throws off. A familiar illustration of such an ideal combination is the serving of potatoes with meat.

Dividing Excess of Acid

IN AN average serving of meat the excess of acid-producing elements is neutralized by the excess of base-producing elements in an average serving of potatoes. It is an interesting fact that an excess of foods of the base-producing type is not in any sense objectionable. Such an excess of acid production is harmful because the natural reaction of the blood and other body fluids is alkaline. Among the plant foods conspicuous for the extent of their use, and which contain an excess of acid-producing elements, are rice and other cereals and cereal preparations such as macaroni and hominy. Acid producers include meats, fish, and eggs, from among animal foods. Base producers are fruits, vegetables, and milk. That fruits have an acid taste but are regarded as base-producing foods may seem paradoxical. From this, then, it is obvious that, while among fruits and vegetables there may be quite free substitution, yet rice which contains an excess

of acid-producing elements cannot take the place of the potato which gives rise to base-forming elements. The substitution of rice, because of its starch content, must be accompanied by the addition of succulent vegetables.

From a review of tables giving statements of food composition the housewife will discover that the vegetables and fruits rich in the starch form of carbohydrates are the Irish and sweet potatoes, and the unripe banana. Those containing an abundance of the sugar form of carbohydrate are beets, carrots, parsnips, corn, the ripe banana, apples, and dried fruits. Vegetables giving a relatively high percentage of protein may be used in part to replace the meat, eggs, and cheese. Representatives of this group are shelled beans, peas, lentils, and the soy beans. Those rich in iron are: spinach and other greens, beans, peas, and onions. In calcium—spinach, cauliflower, rutabaga, celery, turnips, legumes and berries. In phosphorus; legumes, cauliflower, potato, rutabaga, spinach, gooseberries, parsnips, and onions. In potash salts, spinach, legumes, potatoes, bananas, cabbage, lettuce, and the root vegetables. While in general all fruits and vegetables supply quite generously the mineral constituents named, it is sometimes of special value to know the more exact composition and to know what fruits and vegetables serve as a more abundant subsidy.

Practical Vegetable Combinations

TO ILLUSTRATE suitable meal combinations in which meat and potatoes may be very acceptably replaced by vegetables the following menus are given:

- | | | | |
|---|--------------------------------------|--|------|
| I—Roast beef
Spinach
Bread Butter Beverage
Sliced oranges Wafers | Potatoes | II—Beef Stew
A root vegetable, beets or carrots
Lettuce or other greens
Bread Butter Beverage
Fresh fruit | Rice |
| III—Baked beans and tomato sauce
Steamed brown bread
Escalloped onions
Fruit cup and Sponge Cake | | VI—Bean loaf and spiced gooseberries
Creamed potatoes
Bread and butter
Apple, celery and nut Salad
Wafers | |
| SUPPERS: | | | |
| I—Cream of Sweet Potato Soup
Nut bread Escalloped tomatoes
Baked apple Wafers | | II—Salt mackerel—steamed
Boiled potatoes with butter sauce
Creamed onions
Bread and butter
Fresh apple sauce Cookies | |
| III—Baked omelet
Bread and butter and jelly
Sauce Cookies | Bacon
Butter and jelly
Cookies | IV—Cottage Cheese
Buttered carrots and peas
Bread and Butter
Berries Spice Cake | |

In explanation of the foregoing menus it should also be stated that it is regarded as highly desirable that fruit—preferably fresh fruit—replace in large measure the pies and heavy puddings that are customary desserts. Liberal introduction of a variety of vegetables is recognition of the important part that the vegetable cellar and the vegetable pit should play in the family commissary. Again, it will be noticed that there is suggestion of the frequent use of nuts—that because of their highly nutritious character, and, the fact that considering their actual food value, they cost no more than many of the generally recognized staples.

Meat Substitute

IN REPLACING meat in the diet it should be remembered that for one fourth pound of lean beef there may be allowed one half pound of dry beans or peas, two eggs, or a pint of milk. A general guiding rule to be observed in the selection of vegetables is not to combine in one meal any two of the same general character.

What the Florists Will Offer in Holiday Plants ROBERT KIFT Pa.

CHANGES BROUGHT ABOUT BY WAR CONDITIONS—SCARCITY OF CONVENTIONAL MATERIAL LEADS TO GREATER VARIETY IN FOLIAGE AND FLOWERING PLANTS

PLANTS as holiday gifts have during past years gradually fallen into a rut. It has taken the world war to awaken the plant growers to a realization of the fact that the people like variety. The war has to a great extent interfered both with foreign cultivation and exportation. This year there are no Azaleas coming from Belgium, no Lily-of-the-valley from Germany. Only limited importations of bulbs have arrived from Holland and France and some few things from England. But to offset this the raising of plants in this country has already attained a magnitude of such importance, that when the present stringency arrived the trade found itself easily self-supporting.

BECAUSE of their sturdy and lasting character, ornamental foliage plants find much favor as gifts. In Palms, the Kentias, both the tall growing *Forsteriana*, and the bushy *Belmoreana* are the most popular. *Areca lutescens* with its more feathery leaves is very graceful, but not quite so hardy as the Kentias. *Phoenix Roebelinii* with its fountainlike spread of narrow leaves, is to some the most beautiful of all Palms. It is very sturdy. The Fan Palm, *Latania borbonica*, is also a fine showy variety, which looks well in the lawn vase in summer.

The *Aspidistra* with its broad dark green foliage is the most sturdy and valuable of all house plants. There are several varieties of the old favorite Rubber-plant, or *Ficus elastica*, and *F. pandurata* the Fiddle-leaved Rubber with broad leaves the shape of a violin, which when rubbed with a piece of Canton flannel polish beautifully, showing distinct white veins. The appearance of all house plants with hard foliage is much benefited by an occasional rubbing, but positively no oil or other dressing should be used, as this leaves a tacky surface which catches dust. *Dracaenas* are very decorative; terminalis with its brilliant red tips looks very Christmassy. *D. fragrans* with its cornlike leaves

is strong and vigorous. *D. Massangeana* a variegated form of *fragrans* with a broad golden band down the centre of each leaf, is always popular. There are a number of other choice varieties all beautiful and suitable for house plants. *Pandanus Veitchii* with its green and white striped leaves of most symmetrical form is one of the best house plants. *Crotons* with their brilliant coloring are wonderfully effective and while not so hardy in the house, will last several months.

FERNS are perhaps the most popular of all house plants. The Boston fern *Nephrolepis bostoniensis*, and its large family of crested types is seen everywhere. In the past decade many new varieties have been introduced.

Of the plain or smooth frond type the best are: Boston, a dwarf type named Scotti, and Teddy, Jr. Of the crinkled forms the best are W. K. Harris, *Harrisii* and Theodore Roosevelt. The tasselled varieties with their minutely cut foliage, some fronds resembling ostrich plumes while others are lacelike in appearance, are sure to attract attention. *Elegantissima*, *todeaoides*, *Verona*, *Norwood*, and *Smithii* are the best in this class. *Asplenium nidus-avis*, the Bird's-nest Fern, is of a bold type with broad glossy fronds which give it a unique appearance.

One of the most delicate in appearance but very decorative and lasting is *Cibotium Schiedei*. It is of spreading growth. Effective in large windows.

IN THE list of flowering plants there is also great variety. The well known *Poinsettia* is probably the most showy with its large scarlet bracts. Novelties are seen in both pink and white varieties of the *Poinsettia*. *Euphorbia jacquinaeflora* is a choice variety, particularly when a number are planted together.

Cyclamen are at their best for the Christmas holidays and nothing could be more beautiful than a well flowered specimen. They are to be found in all their splendid colorings in every flower shop. Flowering *Begonias*, great favorites of all plant lovers are also at their best during December. *Begonia Gloire de Lorraine* with the clouds of pink blossoms which are borne so profusely as to almost hide the foliage is the first of its type. *Begonia*

Glory of Cincinnati is a strong grower, also pink, with larger flowers and foliage. *Begonia Mrs. Peterson* is a new variety with both bronze colored flowers and foliage, it is robust and free flowering. There will be quite a few Azaleas from plants imported last fall which owing to difficulties of transportation, arrived in poor condition. They made a good growth since that time and are now well set with buds.

Chinese Primroses as well as some of the *Primula obconica*s give variety. They are old acquaintances that are always welcome. Several varieties of the Heather are most conspicuous at this season. *Erica melanthera* with its clouds of white blossoms is a first selection with many. A pink variety called *rosea* is also much in favor.

Some of the bulbs are forced for the holidays. Roman Hyacinths and Paper-white Narcissus and Duc van Tholl Tulips, when flowered a number together are quite showy.

Berried and fruited plants are always in demand, particularly the Christmas Pepper with its wealth of brilliant red fruits. *Solanum capsicastrum*, the Jerusalem Cherry, is seen in variety with its bright red berries.

Ardisia crenulata with its glossy leaves and whorls of beautiful coral red colored berries which hold for more than 12 months, is one of the best plants of its kind.

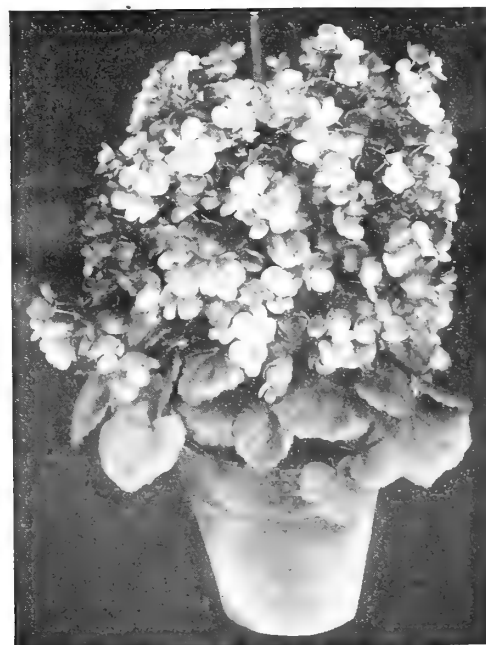
Otaheite oranges of dwarf growth but carrying an abundance of well colored fruits about the size of golf balls are showy and attractive. Combinations of foliage of flowering plants and ferns arranged artistically together in tin lined baskets and jardinières will be features at the holiday season. These are arranged at the greenhouses by men skilled in this artistic work. Pink *Begonias* and Ferns are grown in blue baskets and tied with blue ribbons. Oranges are planted with *Crotons* in bronze colored baskets and tied with bronze green ribbons. Heather and *Poinsettias* make stunning effects. *Ardisias* and Heather with *Crotons* and Ferns are striking. There is great variety in this artistic grouping scarcely any two pieces being found alike.



Of all the holiday berry plants *Ardisia* is the most enduring. Berries will remain for a whole year



This is *Croton Reedii*. *Crotons* come in a bewildering variety of barbaric mixtures of color and in equally diverse form of leaf



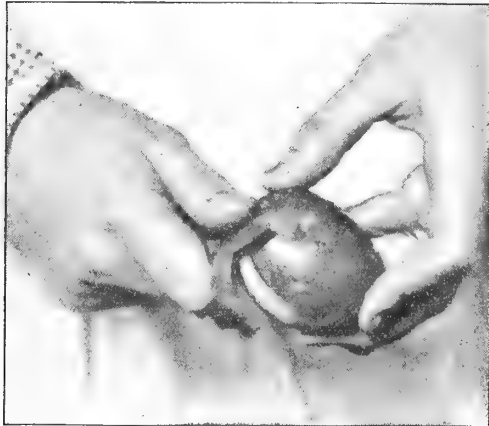
There are available several *Begonias* of the *Gloire de Lorraine* type, ranging from light pink to deep red

Can You Cook a Potato? EFFIE M. ROBINSON

WITH an extra bushel of potatoes for every man, woman and child in the United States (official figures) this year the cooking of the potato becomes a real menace. Simple! Yes, any one can boil a potato—somehow—but the problem is to do it right, and know how and why you do it.

How to Choose Your Potatoes

GREENISH, or black colored, frozen or softened potatoes may as well be thrown out at once. Don't waste your time prepar-

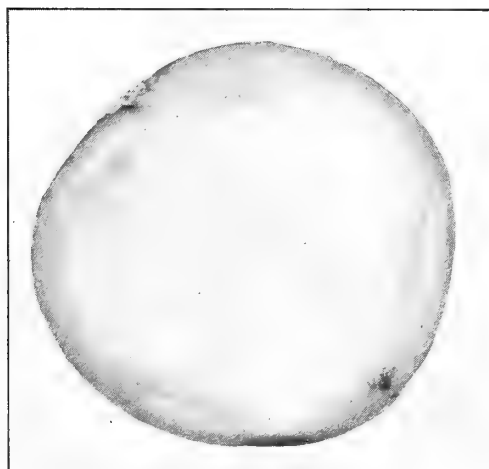


There is economy in properly peeling a potato. Let the knife closely follow the thumb and pare thinly

ing them for the table—find some other use for them. Potatoes should be firm and white and of even size. Whether you dig them from your own ground or buy them from the stores, large and small are always jumbled together. Now, if cooked as they come the small ones will be cooked to a mash before the large ones are done. If you must cook large and small together do not cut the large ones but make a handicap race out of it. Start to cook the large ones a few minutes before the small ones are put in, they will then all finish cooking at the same time.

Preserve the Gluten

PEEL your potatoes very thinly. The gluten, which lies just underneath the skin, is the most nutritious part of the potato; the rest of it being composed chiefly of water and starch. As you will see by the illustration of a slice of potato, the layer of gluten is very thin in some places, and if the skin is peeled off in great chunks the gluten is peeled off with it and thrown away, thereby losing



Do you realize that the outer portion of the potato has the best food value? Gluten is shown by the darkened area on the margin of the picture

the nourishment and wasting the potato, and consequently more potatoes will be needed for a dishful.

New potatoes must be scraped as the skin is very thin and peeling would cut away too much. All potatoes must be scrubbed quite clean before peeling. This done drop them into a bowl of clean water. Use a small sharp vegetable paring knife, letting the thumb follow the knife closely all the way down the potato. This keeps control of the knife and will prevent it slipping. Drop them into cold water, after peeling them, till you are ready to cook them to prevent them from turning black.

If You Don't Want to Peel Them

SOME people think it is better to cook potatoes with the skin on and that they are a better flavor. If this is done they must be put on in cold water to draw out the poisonous acid, called solanin, that is in the skin. It gives a bitter flavor and has sometimes been known to cause illness. It is more pronounced in old potatoes.

When preparing potatoes with the skin on, whether new or old, it is a good plan to "top and tail" them. That is, cut a small piece off each end of the potato, or you can cut a very narrow strip off all around it, making it easier for the salt to penetrate, besides giving the potatoes a better flavor.

The Water You Must Use

PUT potatoes into boiling water to harden the gluten. Gluten is the same sort of substance as the albumen found in the white of eggs and if put into cold water it will melt and soften. As a result a great deal of



"Flowery and light." The tool on the left is handy and efficient. Two forks make a serviceable masher

it will be lost before the water gets hot enough to harden it. Have plenty of water in order to give the starch grains room to swell, and to each two quarts of water add a heaping teaspoonful of salt. Keep the lid on closely to prevent the steam escaping. Boil them gently and steadily to prevent them from breaking. After half an hour try them with a skewer or a steel knitting needle (anything that will make one hole); a fork pushed into a soft boiled potato will break it and spoil its appearance. When the tubers are tender, drain the water off into a bowl (not into the sink!) as the water is a good foundation for cream soups or broths.

How to Have "Balls of Flour"

NOW for the secret of dry floury potatoes! Drain the potatoes dry. Give the pan a sharp, quick shake. This breaks the coating of gluten and the white starchy inside is exposed, making the potato look like a ball of flour. Put the saucepan back in a warm place, laying a clean soft cloth on the top to absorb the steam. Don't put the lid on as that keeps the steam in and makes the potato soggy and discolored. You can keep potatoes warm with the cloth on top for about ten minutes without spoiling.

How to Steam

IF MORE convenient, potatoes can be steamed instead of boiled. The water must be boiling and steam ready before the potatoes are put into the steamer. Peel them the same as you would for boiling, then place them in the steamer and sprinkle salt over them. They will take about one hour. Shake the pan as for boiled potatoes. I see no par-



"Hacking off" the skin is wasteful of food. And moreover, sacrifices the best part of the potato

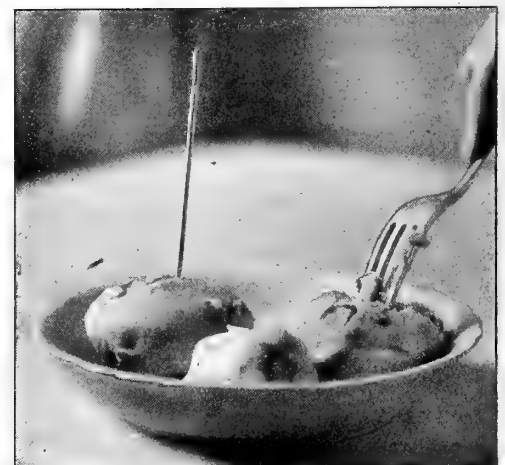
ticular advantage in this method myself if the potatoes are put into boiling water, though some people claim that there is so much water in a potato that it is better not to put them into more.

For Salad

PPOTATOES for salad must not be shaken because they are required to be as waxy or watery as you can get them. The small potatoes are best for that purpose. Cut them while hot.

How to Bake

THE lady next door to me never baked a potato in her life and there may be others like her. You cannot bake *new* potatoes—the skin is too thin. But when the skin becomes thick and corklike it is a delicious way to cook them. Scrub them quite clean; then dry them thoroughly. Have a hot oven ready to bake them in or the skin will not be crisp; and when they are nearly done prick them with a skewer in two or three places to allow the steam to escape; otherwise they will quite likely burst all over the oven. They take about one hour to bake.



"Is it done?" Use a knitting needle to explore; a fork may smash the potato to a pulp

Winter Protection

C. L. MELLER Supt. of Parks
Fargo, N. D.

COLD LESS INJURIOUS THAN LOSS OF MOISTURE—WHY A MULCH WILL SAVE AND HOW IT CAN SOMETIMES BE INJURIOUS—CAN A TENDER PLANT BE MADE HARDY?

WINTER protection to be effective must be intelligently done. This, to some may seem a mere truism, and to others an affectation, since what intelligence is needed to wrap or cover up a plant and so protect it against the cold of winter? But there's the rub!

Are you in fact protecting it against the cold? Can you really protect a plant against the cold with the thermometer below zero and the frost penetrating the soil to a depth of six feet and more? Obviously under such conditions no amount or kind of covering can long retain a higher temperature than that which surrounds it. Covering, however, does carry through the winter plants that would otherwise succumb. It cannot well be warmth since none is provided. Then what is the adverse factor that covering a plant counteracts?

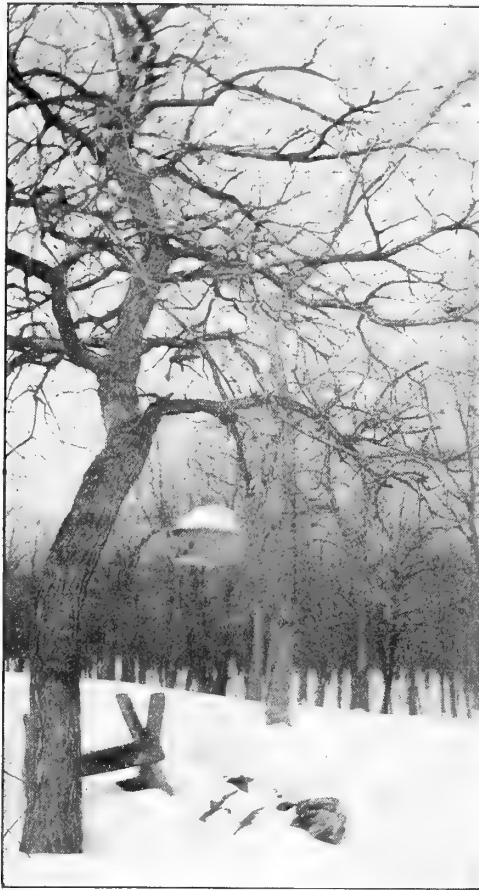
Consider a Rose that has winter killed. All its canes are dried and shrivelled, just as though they had been dried in an oven. Compare these canes with those of another Rose bush that has passed through the winter beneath a mound of earth. How plump and pliable are these latter, how sappy they look! Yet the two bushes may be of the same variety, as, for instance, Gruss an Teplitz which I have carried through the winters of North Dakota by the hundreds, simply by hilling about the bushes with a mound of earth. Exposed bushes always die down to the ground; and exposed portions of canes die back to the soil covering.

It is not the cold but the excessive evaporation that "winter-kills." Protected against evaporation (and soil is the surest means of protecting against it), a Rose bush passes through our coldest winter unharmed; exposed, the bushes succumb save during an exceptionally mild winter. What is true for Gruss an Teplitz is equally true of a very large number of hybrid perpetual Roses.

So hardy and vigorous a grower as Spiraea Van Houttei gives like evidence. During a cold dry winter when the snow is always light and dry, and much of it apparently freezes away, this shrub comes out in spring badly winter-killed, never down to the ground, but with its top full of dead wood. During winters when there is much wet snow, it passes unharmed to bloom like a bank of snow in spring. Of course no one ever thinks of covering a Spiraea bush.



Even in the extreme north the Prickly Pear will winter under the shelter of a rock



A piece of ice hung in a tree lost appreciably during February. Evaporation is the cause of winter-killing

Evaporation of Ice

A CHUNK of ice weighing nineteen and a half pounds was hung among the branches of a small Oak on February 2nd and when taken down on the fourteenth it weighed eighteen pounds. There was not a minute's thaw during the entire time the piece of ice hung in the tree, indeed the thermometer registered below zero almost every day. Thus in less than two weeks this ice, a solid mass, gave up by evaporation very close to 8 per cent. of its total weight, a concrete example as you will admit of what wooded plants are called upon to endure.

Again on February 27th another piece of ice was hung among the branches of the same Oak. This time the ice was placed in a pan so that no water might be lost during warm weather. Ice, pan and the wire supporting it weighed twenty-four pounds. This hung out until March 24th when only water was left and the entire outfit then weighed eighteen pounds, a loss therefore in a little less than a month of more than 25 per cent. since the weight of the pan remains constant.

Let it be borne in mind that a plant is subjected to this stress of evaporation while the roots are in solidly frozen soil and have no means of replenishing the moisture lost. Under such circumstances evaporation has a meaning all its own. It is apparent that a plant with well ripened wood has a much greater chance of living through such conditions than one with its wood green and sappy. That is one reason why native Roses pass through our winters unharmed while many of the improved sorts succumb if unprotected.

What We Must Do

AS AN axiom of winter protection it may be stated that any method to be effective must protect against evaporation. The extent to which it prevents evaporation marks therefore the effectiveness of the material selected.

Given suitable soil, most of the climbing Roses will grow in the Northwest, but a mat of straw tacked over them against the wall will never carry the canes through winter. They must be laid down and covered with about a foot of soil, and so covered they will come out in spring alive to the very tip. Where from some cause or other this cover is removed in spots, the canes may be alive at either end with a dead section here and there. This of course means that only the part below the lowest dead section will remain alive.

A Hardy Cactus in the North

NO ONE would at first thought associate the Prickly Pear Cactus of our warmer states with the cold of a Northwest winter; yet, as our picture shows, it may be met with growing wild on the prairies of Montana. This photograph was taken about a mile out of Glendive, Montana; and, the picture also shows, the Cactus hugs the ground pretty closely for in so doing it is assured of a plentiful covering of snow and consequent protection in winter. The cold penetrates the soil to such a depth and leaves it so slowly that you may strike frost down in the soil even in late May and sometimes in early June. Under such conditions it does not seem reasonable to suppose that this Cactus native though it be to the sandy wastes of our hottest sections, requires any protection against cold. That it does require protection against evaporation becomes apparent from the very nature of its growth.

Freezing is not injurious, but should the plant be called upon to give up moisture at a time when it lacks the means of replenishing the loss failure is certain. As an odd and interesting growth in the garden one may carry this Cactus through the winter if planted where boulders or a wall will protect it from the searching winds of the north and west and covered with a thick layer of straw. It is expected of course that there will be no lack of snow.



In Montana this Cactus hugs the ground and gets natural winter protection

The Herbaceous Border

HERBACEOUS perennials dying down as they do each year and with roots tucked away from the reach of the wind would appear to require but little if any winter protection. Nor do they. Though to cover them with leaves, straw and other litter gives us a certain contentment as of having done our best by the plants. Yet we find that uncovered plants pass through the winter equally well. *A perennial that is not hardy cannot be made so by any amount or kind of winter protection.* Occasionally one may carry a perennial of doubtful hardihood through a mild winter, but the very next winter proves the fallacy of our theory that protection is a

help through the winter. Against the vicissitudes of our springs we cannot protect a plant and these vicissitudes are many: cold, damp soil, late frost, drying winds and the like.

How a Mulch Works

A HEAVY mulch of soil or other material will retard the sprouting of the roots in spring, but the chances are small that the plants can be held back long enough to help them in their struggle against a capricious season. In spite of all the roots will attempt to grow and the covering, if not removed in time tends to make the sprouts spindling and even induces rot by over heating. Along the south side of a house perennials will come up a

week and even two weeks ahead of those against the north side, yet in either case a hardy perennial will pass through the winter as well unprotected as protected.

Spruce boughs make excellent material for winter protection since they, like soil, retard the circulation of the air and so prevent evaporation. The newly fallen leaves have little protective value, rather it is the blanket of leaf mould underneath that keeps the plants of the forest snug through the winter. Also of course, the snow that gathers there is a considerable help.

The practical lesson for every gardener to learn is that mulching material must be light and airy to be effective.

NOVEMBER IN THE SOUTH

OPPORTUNITY FOR FALL PLANTING—PREPARATIONS FOR NEXT YEAR'S FOOD GARDENS

FALL planting is now the occupation of the Southern gardeners. Fruit trees and ornamental trees and shrubs can be planted now. Prepare the borders in the flower garden for the spring blooming bulbs, mixing in well rotted cow manure. Plant Tulips and Hyacinths from four to six inches deep. Plant Narcissus, Snowdrops, Star of Bethlehem, and Chionodoxa in irregular groups in the grass for naturalization. They increase and spread, and do much better when left undisturbed, which would not be the case if planted in the flower borders.

If the weather is open, sow lawn grass seed during the early part of the month on thoroughly prepared land. Sow the seed broadcast, then use a heavy roller to press it into the soil.

Make a new strawberry bed the early part of the month if the soil is not too wet and the weather is open.

Spread agricultural lime over the vacant plots in the garden, and in ten days or two weeks thereafter spread broadcast well rotted manure, and plow in deep, and leave the ground rough so as to mellow with the constant freezing and thawing. In early spring it can be again plowed and thoroughly pulverized with the disk harrow and rake. Sow rye now and plow under in the spring. It benefits the land by making humus.

Last Sowings in Order

MAKE a last sowing of spinach, kale, and turnips for salad either broadcast or in rows.

Keep the lettuce frames going steadily, one crop following the other. Plants from seed sown in August and transplanted in September should have been pushed to maturity by fertilizers (nitrate of soda, or liquid cow manure), so that they will be headed up well by Thanksgiving. More seed should be sown now to be ready for transplanting in January. Use Burpee's Way-ahead, a good butter head type; Hanson has a good flavor and is crisp, has a crinkled leaf, does not head up.

Asparagus plants can be set out from now on until March as long as the ground is in good working condition. Giant Argenteuil, Reading Giant, and Conover's Colossal are good types and free from rust. The latter is well flavored and good for cutting green. The former is large and tender and excellent for canning. Plant asparagus in trenches two

feet deep and two feet wide, five feet apart, and fill in with one foot of manure, cover with four inches of soil and place the plants fifteen inches apart in the trench and crosswise, spreading out the roots. Pack the dirt around the roots, but do not fill in the trench completely. Asparagus roots have a tendency to work upward and should be planted deep and the dirt filled in gradually. The shoots should not be cut for three years, and then very sparingly. Cut only for two months after the shoots appear above ground. Asparagus is a gross feeder, so cover heavily with manure in the fall, and supplement with a commercial fertilizer in early spring, and harrow into the soil in March, as the cutting begins in April.

Set out the cabbage plants for the spring crop. Early Jersey Wakefield is a good early variety. They need little protection, only coarse straw manure between the rows, not close on the plants, as it would be too heating on mild days.

Continue to bank up the celery plants, and at end of month or first of December cover with straw or pine tags, placing on top some planks in a sloping manner like a roof so as to carry off rain and snow.

Making all Snug

PRUNE old apple trees and scrape the loose bark from the trunks, as it harbors insects beneath. Peach and plum trees should be trimmed and the trunks examined for borers. Dig a foot below the level of the ground, and cut out the borers with a stout wire or a sharp knife, and paint the trunks for a foot below, and two feet above the level of the ground with coal tar or lime-sulphur.

New trees should be pruned and headed low, making it easier to gather fruit. Feed the roots of the trees either by spreading manure broadcast and plowing it in, or sowing rye or crimson clover in the orchard the last of October or first of November to be plowed under for green manure in the spring.

Search for cocoons and eggs of caterpillars and insects and destroy them now. It will save much labor in the spring. Examine the ornamental trees as well, and destroy the cocoons of the tussock moth, and any other evidence of insects.

Protect Otaksa Hydrangeas and standard tender bush Roses with a little straw wrapped about them. Other Roses only need coarse straw manure above the roots.

Sow seed of Poppies, Forget-me-nots, and Sweet Alyssum, and Portulaca, and Arabis in the border where they are to remain.

Clean up the flower borders thoroughly and burn up the trash. Trench between the perennials and roses, digging above two feet, putting in a foot of manure and replacing the dirt on top.

VIRGINIA.

J. M. PATTERSON.

Fall Plowing for an Early Start

PREPAREDNESS is the present moment slogan for the gardener as for anybody who is aiming for efficiency. The gardener must get started in the fall and continue his preparations during the winter, in order to forward the work of spring. While trucking in the North, my most important work in the fall was plowing. On land that is to be plowed in the fall one can use fresh manure, full of straw or shavings, with success; for the rains of early spring and the spring work settle the dirt down firmly on and in the manure. In this way one gets all the value of the manure. Another advantage of fall plowing is that the soil is improved by freezing when left rough. It also helps exterminate injurious worms, as grubs, wire worms, etc. In this section, very little fall plowing is done, for the following reasons: Either the soil is so light that it blows, or, where heavy, it runs together so that but little is accomplished; or, some cover crop is or ought to be growing. Soils that are poorly drained should have attention given to their drainage before the ground freezes. Small patches are easily drained by digging ditches twenty to thirty feet apart and three feet deep and filling them with stones within 18 inches of the surface. Trenches of this sort will carry off all surplus water and admit of very early working in the spring. Here cantaloupe growers draw new manure for compost heaps; but in the section south of us, furrows are plowed, manure drawn directly from the cars and placed therein, being left there until about time for planting. Manure is also drawn for covering the strawberry patches. Don't wait until next spring to plan improvements to your ground. The fall is a good time to transplant apple and cherry trees, evergreens and Rose bushes. Prune fruit trees and grape vines, etc.

MARYLAND

SAMUEL H. GAREKOL.

A Woman's Idea that Proved a Business Inspiration

Just about 5 years ago at this time, one of our esteemed clients, Mrs. F. N. Doubleday, of Oyster Bay, L. I., called on us for aid to carry out a most unusual idea. Knowing her husband's sentiments toward trees, also the beneficial and restful influence exercised by their presence, she decided to give him Trees for a Birthday Gift! Three stately Evergreens she selected at our Nursery, trees 30 years old, ready to immediately produce the effect for which nature created them. We planted the trees within sight of Mr. Doubleday's office window and there, they have ever since fulfilled the mission for which a thoughtful woman intended them.

Here, then, is the idea of gifts of an unusual character. Instead of jewels, tapestry, etc., think of living trees as the greatest of all gifts combining usefulness with beauty and interpreting sentiment in the most delicate degree. In expressing *your* sentiments, call to your assistance

Hicks'—The Nursery That's Prepared

We have been getting ready for just this type of service for over a quarter century. Acorns we planted have developed into stately oaks, ready to become some one's pride on the home grounds. *Evergreen hedges* tall enough to furnish *immediate* seclusion; *symmetrical shade trees* that will make the *new* home as restful and cool as the old estate; Pine windbreaks that will add many degrees of comfort to homes in windswept sections—these and many other large trees *developed for specific purposes* are ready at this nursery, waiting to perform the duty which *your* ingenuity may assign to them. There are tree gifts to suit all purses. Attractive groves of shade trees are available for \$50.—Every dollar invested in Hicks' Large Trees stands for a substantial saving of time.



Christmas Gifts of Unusual Character for the Busy Business Man

The following special offers should prove of particular interest to New York Business Men who are in a position to look over these "Gifts," and select what most appeals. We are always glad to look after the details of delivering and planting.

- "Live" Screens to Shut off a Noisy Street, in form of a Wall of Green, 8 ft. tall, \$3.18 per running ft., \$318 per 100 ft.
- A Wall of Green, that Saves 10 Years' Waiting, \$6.60 per running foot.
- A Group of Rare Evergreens for Foundation Planting, 32 Specimen Plants of various heights and shapes \$36.
- A Little Fruit Orchard, containing our own choice of a "Home Use Fruit Collection" of 13 Trees for \$6.
- Appetizing Small Fruit Collection of Berry plants and Roots, 170 Plants of many kinds \$7.
- A Grove of Big Shade Trees, composed of kinds with particularly brilliant foliage at different seasons, 12 Well-shaped Specimens for \$10.

These are but a few of the many remarkable offers you'll find in "Shade," the booklet described below, which is yours free for the asking. Why not take us into your confidence and let us help you select the tree or plant gift that will best please the recipient?

"Shade"

A Booklet "De Luxe"


Points the way to tree gifts for every purpose and occasion. A cozy, shady nook, made to order at Hicks' for the grandchildren; a living hedge, more economical and more beautiful than stone or iron fences; the Boundary Line Beautiful of Hemlocks or Pines, these are but a few of the subjects fully described and illustrated. All are ready at Hicks' to serve people of discrimination in search of the unusual in gifts for all seasons. Both, "Shade" and "Fall Leaves" are mailed free on request. Editions limited—write TO-DAY.

Hicks' Trees are Guaranteed to Grow

At this nursery, men, methods and sentiment combine to help nature produce trees and plants of extraordinary character. We ourselves love trees—that's why we understand their needs for perfect development. This we encourage by frequent transplanting, repeated pruning and such other cultivation as each tree deserves. The 100-point product thus obtained is dug with particular care, packed, as many decades of experience have taught us how and shipped or delivered in such a manner as to bring the trees to their new home in a thriving condition. Hicks' Trees *must* grow for you or new trees will be supplied without charge for any that do not grow satisfactorily.

"Fall Leaves" To us, trees and plants are living things, to be treated with consideration and to be fitted to the environment that best suits them. We find trees to be ideal material with which to produce color harmony around the home. Particularly happy examples of trees put to ideal uses are illustrated in our new folder "Fall Leaves," telling about Trees for November and December planting. To the man or woman looking for practical examples of good tree plantings, this booklet will prove an inspiration. A limited number are still available to fill quick-action inquiries.


Hicks Nurseries, Box M Westbury, L. I., N. Y. Phone 68



Iris and Phlox

With a selection from the choice varieties listed in my Hardy Plant booklet, you can have flowers from spring until frost. This fall is the time to set Iris and Phlox, for, if you do so, they will bloom next year. If you cannot come in person to select your plants, send your name and address for a copy of the booklet.

Adolf Müller DE KALB NURSERIES
Norristown, Penna.



THE most complete stock of hardy plants in America. Illustrated catalog of hardy plants, shrubs, trees and bulbs sent free on request.

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- Antirrhinum glutinosum "Copper King"
- Antirrhinum glutinosum "Crimson King"
- Aquilegia Silver Queen
- Campanula barbata
- Canterbury Bells
- Rock Pinks—18 varieties
- Foxglove—"Ayrshire White"
- Myosotis "Welwitchii"—New
- Polyanthus—Bush Primrose—Finest Strain
- Verbascum—Miss Wilmott

Descriptive Booklet FREE

WOLCOTT NURSERIES, Jackson, Mich.

Twice Armed Be Your Garden

In these war times a Sunlight Double Glass Sash outfit—a cold frame, a hot-bed, or a small ready made greenhouse is doubly valuable. It will carry the growing of many kinds of vegetables through Fall and Winter, and provide plants for early crops out-of-doors in Spring. These food supplies are now vital and when peace comes the same glass for a lifetime longer will go on expediting flowers and vegetables.



Cold Frames or unheated greenhouses are best for certain crops and conditions, but it is easy to turn a Sunlight Cold Frame into a hot-bed or provide artificial heat for a small double glazed greenhouse.



Sunken Path House

Even the little Sunlight Suntrapz set over plant boxes in a sunny room or in the sun out of doors will do their bit in starting seed or growing plants.



Bench House

Immediate shipment is made of sash, greenhouses, top frames, pit frames or any other outfits we carry in stock.

Get our complete catalogue and net price list. A postal card will do.

SUNLIGHT DOUBLE GLASS SASH CO.
927 E. Broadway Louisville, Ky.

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in November

(Following dates are meetings unless otherwise specified)

- Minnesota, Minn., Garden Flower Society. Chrysanthemum Show, by announcement.
- Oct. 31 } Special Fruit Exhibition of the Massachusetts Horticultural Society, The New England Fruit Show, and the American Pomological Society, Boston, Mass.
- Nov. 4 }
 - 1. Marshfield, Mass., Garden Club.
 - 2. Pasadena, Cal., Horticultural Society.
 - 5. New Bedford, Mass., Horticultural Society.
 - 6. Lake Geneva, Wis., Gardeners' & Foremen's Ass'n. Garden Club of Pleasantville, N. Y.
 - 7-8. New Bedford, Mass., Horticultural Society. Chrysanthemum Show. (Subject to change.)
 - 8-11. Cleveland Flower Show, Cleveland, Ohio, in conjunction with Annual Meeting and Exhibition of the Chrysanthemum Society of America (Cleveland) and Fall Meetings and Shows of the American Rose Society (Cleveland), and American Carnation Society (Cleveland).
 - Horticultural Society of New York, American Museum of Natural History, New York City. Annual Fall Exhibition.
 - 9. Connecticut Horticultural Society, Wethersfield. Westchester, N. Y., & Fairfield, Conn., Hort. Soc.
 - 9-10. Valdosta, Ga., Floral Club (amateur) Chrysanthemum Show.
 - 10. Dobbs Ferry, N. Y., Horticultural Society.
 - 12. Park Garden Club, Flushing, L. I.
 - Rochester, N. Y., Florist Association.
 - New Rochelle, N. Y., Garden Club.
 - New York Florists' Club, New York City, N. Y.
 - 14. Short Hills, N. J., Garden Club.
 - Lenox, Mass., Horticultural Society.
 - Nassau Co. Horticultural Society, Glen Cove, L. I.
 - 15. Marshfield, Mass., Garden Club.
 - 15-16. Rhode Island Horticultural Society, Providence, R. I. Exhibition.
 - 16. Pasadena, Cal., Horticultural Society.
 - Dahlia Society of California, San Francisco, Calif.
 - 20. Lake Geneva, Wis., Gardeners' & Foremen's Association.
 - Gardeners' and Florists' Club of Boston, Mass.
 - Rhode Island Hort. Soc., Providence, R. I.
 - Tarrytown, N. Y., Horticultural Society.
 - 23. Connecticut Horticultural Society, Wethersfield.
 - 24. Dobbs Ferry, N. Y., Horticultural Society.
 - 26. Park Garden Club, Flushing, L. I.

New York Spring Show

THE International Flower Show for New York, March 14 to 21, 1918, will be held under the same conditions and in the same place as the previous internationals—the Grand Central Palace. The preliminary schedule has been issued and offers as a framework of the display classes very much the same as those in preceding years. For the display of cut Roses, covering two hundred square feet, the first prize is \$500; for display of Carnations, \$150. In the named classes for cut Roses, prizes vary from \$50 to \$100. Display of Orchids, \$500. For a border planting, \$500. No inducement is offered for the hitherto familiar Rose Garden feature.

The Exhibition Season

DURING the month of November various horticultural societies will hold annual and fall shows in which the Chrysanthemum naturally will reign supreme. The biggest gathering will be at Cleveland, Ohio, where the Chrysanthemum Society of America will hold its annual convention, November 8 to 10. Several coinciding events combine to make this a truly representative gathering of the season. The Cleveland Flower Show is conducted under the direction of the Ohio Horticultural Society, the Cleveland Florists' Club and the Garden Club of Cleveland; and in addition to being combined with the meeting of the National Society devoted to the Chrysanthemum, there will also be combined fall meetings and exhibitions of the American Rose Society and the American Carnation Society. The combined displays will be held at the Hotel Statler. Naturally these events will offer the best opportunity this season of seeing grouped together at one time the various novelties in the florists' flowers.



Have Flowers in Your Home all Winter

At very little expense and with but little care you can have an abundant succession of flowers in your home throughout the entire winter.

A Very Simple Method

of indoor culture is given in our Autumn Bulb Catalogue. Let us send you a copy. Learn how to bloom Paper White Narcissi, Roman Hyacinths and other attractive flowers in your home.

You will also find in this catalogue cultural directions and a list of bulbs for fall planting outdoors. It is a splendid guide for amateurs—write for your copy at once.

Narcissi, Paper White Grandiflora
First size, 13 to 15 cms, 50c. doz. \$2.75 per 100. \$25.00 per 1000.

French Roman Hyacinths, White
12 to 15 cms circumference, \$1.10 doz. \$8.00 per 100. \$75.00 per 1000.

Post or express paid East of Mississippi River. Points West add 15% to your remittance

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The matter of seed sowing constitutes often a most tedious job. If done hurriedly, by hand, rows are apt to be irregular, seeds are often sown too thickly. The resulting need of thinning is a serious loss of time, not counting the waste of seeds. All this can easily be avoided by the use of

PERFECTION DRILL AND SEEDER



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Will sow all kinds of small garden seeds evenly, and to uniform depth. Of particular usefulness in hotbeds and greenhouses. A board is placed across bench, on which the little wheel runs. This operates the disc in the hopper which regularly and evenly drops all seeds, from lettuce and radishes to cabbages and tomatoes. Different size discs are supplied for different size seeds. The drill is a model of simplicity, cannot get out of order, and serves its purpose a lifetime. Used on all flower or vegetable seeds.

Price \$2.00; weight 1 1-2 lbs.

Soon pays for itself in seed and labor saved. Will do several times as much work as is possible to do by hand. Descriptive circular on request. Write or order to-day.

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Perry, Iowa

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Roses for Fall Planting

Plant now for indoor bloom this winter and for early outdoor bloom next summer. You'll find a lot of helpful suggestions in our

Autumn Floral Guide

Lists and describes Pot Roses for indoor bloom, Own-root Roses and Hardy Climbers for out-door fall planting. Also hardy Ornamental Flowering Shrubs, Peonies, double herbaceous, Hardy Perennials, Hyacinths, single and double, Tulips, tested on our own grounds, and fall seeds for fall planting indoors and out.

Send a postal for the Guide to-day

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With every order we send sufficient of our prepared moss fibre to plant pips and FULL directions to grow them successfully.

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Farr's Superb Lilacs For Fall Planting

Lilac-time is springtime at its best. One can scarcely conceive of a spring garden without Lilacs; every bush a mass of glorious colors, and filling the air with delicate fragrance.

Seemingly perfect as were the old purple and white sorts, the master hybridizer, Victor Lemoine, touched them with his magic hand, and lo, from them a multitude of glorified forms and new colors appeared, with individual flowers and trusses more than doubled in size; with varieties early and varieties late, thus considerably lengthening the blooming season.

Ellen Willmott, with long pointed trusses and large snow-white flowers; **Belle de Nancy**, soft lilac pink; the splendid early flowered giant, **Leon Gambetta**. These are but a few examples of the more than 100 new varieties that I grow on their own roots at Wyomissing. All these new Lilacs are unusually free bloomers—far surpassing the old sorts. If you wish these rich blooms in your garden next spring, the plants must be set this fall.

Farr's Hardy Plant Specialties

(Sixth Edition, 1917-1918) describes Lemoine's new Lilacs, Deutzias, Philadelphus, Japanese and German Iris, more than 500 varieties of Peonies, Evergreens, and Rock-plants. 112 pages of text, 30 full page illustrations (13 in color). A book of distinct value to garden lovers. If you do not have a copy of this Sixth Edition, send for one to-day.

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Livingston's Famous Tomatoes for Underglass Culture

are easily the most thoroughbred strains in existence to-day. They are the standard by which others are judged and have been such for many years. Among our more than 20 distinct varieties, several excel in special adaptability to greenhouse cultivation. Our special strains of Bonny Best, Comet Forcing, and Livingston's Magnus are but a few of the

Many Sorts for Different Sections but Livingston's Globe Leads Them All

Pronounced by practical growers everywhere as the greatest sort ever evolved for either underglass or outdoor cultivation. One unbiased critic, familiar with all standard tomatoes, calls Livingston's Globe "a mighty responsibility and trust," because of its near perfection. Dependable under all conditions, early, very prolific, of great solidity and good size with a deep pink skin of a matchless shade, Livingston's Globe is indeed a mighty trust to take care of. How well we succeed in doing it is attested to by the thousands of pounds of highest priced seed we sell every year. For underglass culture we offer seeds from our special private stock, extra-selected, saved from clusters of ideal fruits, at 35c per trade packet; 1/4 oz. 85c; 1/2 oz. \$1.60; oz. \$3.00.

Quality in Tomato Seeds cannot be bought cheaply. The underglass grower especially can ill-afford to run the risk of disappointing crops, when the cost of growing them is so great. Livingston's "True Blue" Tomato Seeds are sold in sealed packages only, protected by our "True Blue" Trademark, as shown below. To make sure of the genuine Livingston Grown Seed, order direct from us.

Other "True Blue" Seed Specialties for Use in Hotbeds and Greenhouse

The man who puts absolute dependability above mere price consideration will do well to profit by the experiences of this country's foremost underglass gardeners. Their choice among the most popular vegetables includes

- Livingston's Strain, Crosby's Egyptian Beet**, early, small-leaved, fine quality. Pkt. 10c; oz. 25c; 1/2 lb. 75c.
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- Livingston's Special Grand Rapids Lettuce**, the "crinkly" fringed bunch lettuce. Pkt. 10c; oz. 25c; 1/2 lb. 75c; lb. \$2.50.
- Fireball Radish**, the earliest of the small red forcing kinds. Pkt. 10c; oz. 20c; 1/2 lb. 70c; lb. \$2.00.

Order direct from this advertisement as this selection is not offered in our catalogues—a special offer to Garden Magazine Readers only

Catalogues of "True Blue" Seeds FREE, also "Tomato Facts"

Tell us whether you garden for pleasure or profit, on a large or small scale, and we will mail you that one of our catalogues that will serve you best. "Tomato Facts" is a unique booklet tracing the progress of the tomato from a little-known weed to its present day perfection. Contains many fine recipes. Write for your copy to-day.



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UNDER GLASS

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NOW—Autumn and Early Winter until the ground freezes—is the best time—Nature's time—to plant. Visit our nurseries, only 8 miles from New York.

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Most of them are recent introductions of famous European specialists. A wonderful advance in color and size over the old varieties, many of the shades being entirely new in Phlox.

Phlox can be safely planted as long as the ground is not actually frozen.

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- Europa**—White with decided crimson-carmine eye.
- Elizabeth Campbell**—Bright salmon-pink, with dark crimson eye.
- Geffon**—Tender peachblossom pink, with bright rose eye.
- Grideur**—Soft mauve-rose, suffused and overlaid with a lively deep shade of cerise.
- Minerva**—Luminous violet-rose, with white suffusion and a bright carmine eye.
- Mrs. Jenkins**—The best all round pure white.
- Riverton Jewel**—Lovely shade of mauve-rose, illuminated by a brilliant carmine-red eye.
- Rheinlander**—A most beautiful salmon-pink.
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- Thor**—Beautiful salmon-pink, overlaid with a deep scarlet glow, large white halo and aniline red eye.
- Viking**—One of the latest to flower, of a pleasing soft salmon-rose.
- W. C. Egan**—One of the largest flowered varieties; a pleasing shade of soft pink.

Price—Any of the above Superfine sorts, 20 cts. each; \$2.00 per doz.; \$15.00 per 100; set of 14 sorts, \$2.50.

Our Fall Catalogue also gives a complete list of seasonable seeds, plants and bulbs for outdoors, window garden and conservatory.

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We guarantee our trees to make the growth the planter has the right to expect. This means: You plant our trees properly, give them due care and attention, and then if any of them fail to grow as you have reason to expect, we will replace them without charge. You are the judge of what you should expect.



"Inside Facts of Profitable Fruit Growing" and "How to Beautify Your Home Grounds" sent prepaid for 10 cents each.

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You gain money, better food and health when you garden all winter. It's easy, too, by the use of

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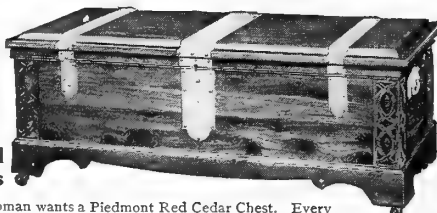
Frost proof; easily cleaned; durable; convenient and so simple a boy can clean it. Requires no covering at night. With Callahan Duo-Glazed Sash summer vegetables may be had all winter; spring may be advanced several weeks, and real profits may be had by intelligent work.

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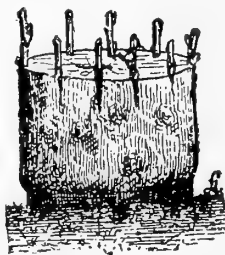
Piedmont Red Cedar Chest Co., Dept. 2, Statesville, N. C.



Reproduction of part of photograph in *Le Jardin* (France) showing wanton destruction of fruit bearing trees in evacuated districts

Helping the French Orchardists

THE Horticultural Society of New York is making an effort to render practical aid to the devastated orchards of France. The Treasurer, Mr. Frederic R. Newbold, Poughkeepsie, N. Y., has already been able to transmit nearly \$2,000 through one of the members of the Society, who is also a member of the American Government Commission for the restoration of the devastated villages of France, and has volunteered to personally attend to the distribution of any funds that are sent over by the Horticultural Society of New York. The response from the membership of the organization was so gratifying that the Society decided to broaden its appeal and is now asking the active support and coöperation and subscriptions from members of the other societies and garden clubs. Subscribers can feel assured that any funds put into the hands of the officers of the Horticultural Society of New York will really reach those who are in need of them. It is estimated that more than a million of fruit trees and berry bushes had been wantonly destroyed in Northern France up to June.



Application of the "top-working" idea to rehabilitate the orchards, perhaps with better varieties

Interest is centred not only in replanting devastated lands with new trees, but also in the work of distributing graft wood and bud sticks for their reconstruction, where the trees had been cut off short as is shown in the accompanying illustration. Grafting methods will fortunately save and reconstruct thousands upon thousands of the destroyed orchards. The Horticultural Society of New York has identified itself very closely with beneficent activities in connection with the International Flower Shows in New York. During the last three years more than \$27,000 has been handed over to the Red Cross and War Relief Committees coöperating.

THE GARDEN MAGAZINE urges its readers to contribute their share in the fund now open for the relief of the French orchardists. Sums of \$1.00 and upward will be gratefully acknowledged by the Editor, or they may be sent direct to the treasurer, as above.

If a problem grows in your garden write to the Readers' Service for assistance

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Elizabeth Leighton Lee, Director, Box 105

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May be done in the North if the plants are rightly cared for. This refers to hardy perennials and bulbs. Deciduous shrubs and trees, if banked may be planted until winter.

When perennials are set late they should be in well-drained soil and protected the first winter. Tulips, narcissus, crocuses, when set late in the North should be covered enough to keep them from frost the first third of the winter, so that the new roots may form. This covering should be removed early in spring.

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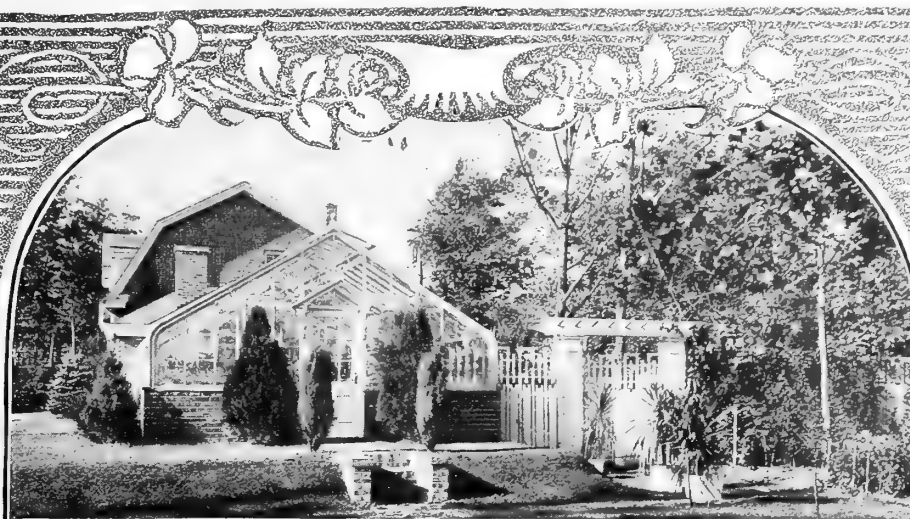
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If you have a garage or some other building you can attach one to; \$1,000, \$1,500 or \$2,000 buys splendid little houses, constructed with everything the very best.

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Builders of Greenhouses and Conservatories

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DELPHINIUMS, the most heavenly blue flower that ever graced a garden. We grow them by the thousands. Bella Donna and other finest Hybrids.
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Strong, field grown plants ready for Oct. and Nov. planting. These plants will make a big showing in your garden next season and will thrive and grow in any climate.
PUGET SOUND HARDY NATIVE FERNS. *Giant Sword Ferns*, 2 to 3 feet, 35 cts. large clumps, prepaid. *Giant Maiden Hair Ferns*, 2 to 3 feet, 35 cts. per clump, prepaid.

How about Peonies? We grow them. Send for named list. 1917 Reliable Home Grown Seeds also. Order from this ad direct, mentioning the Garden Magazine

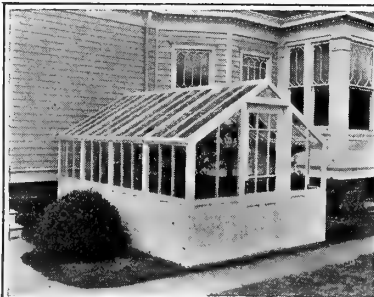
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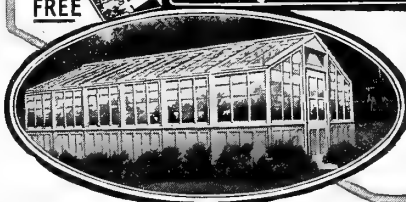
OF ALPINES AND ROCK PLANTS from the rugged slopes of the Rocky Mountains will condense more joy into a small space than any other style of Fall Gardening. The list includes rare and choice varieties of Anemone, Columbine, Clematis, Delphinium, Gentian, Evening Primrose, Pentstemon, Yucca, Hardy Cacti, and many others not commonly cultivated, all hardy and easily grown.

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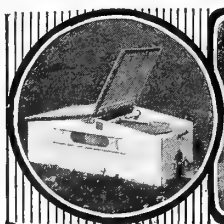
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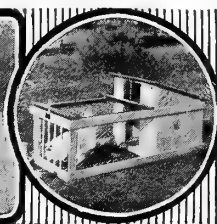
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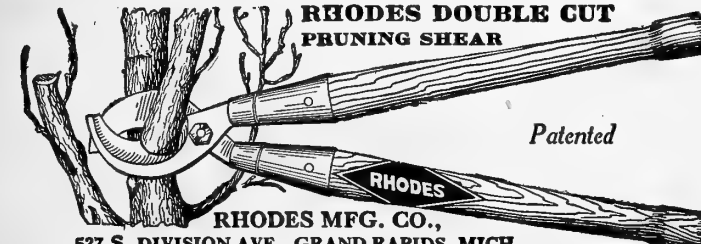
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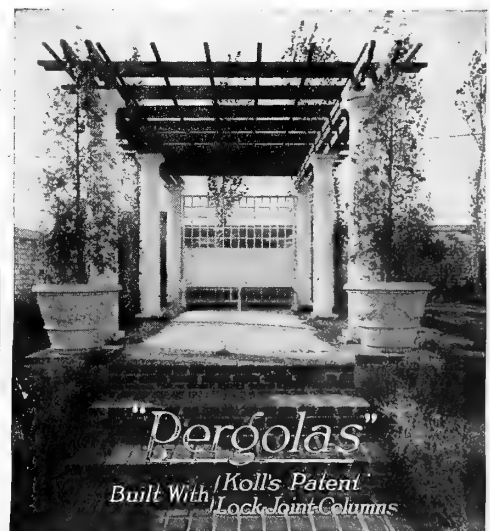
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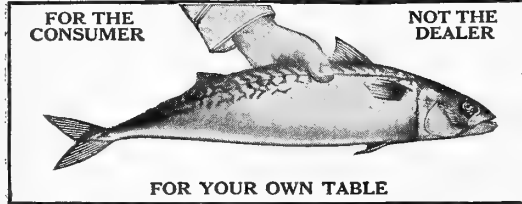
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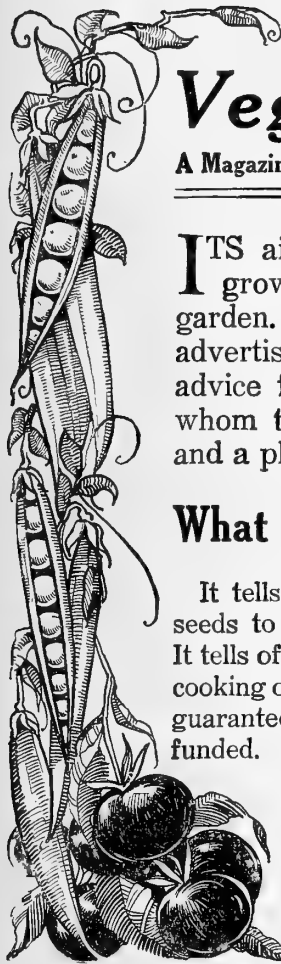
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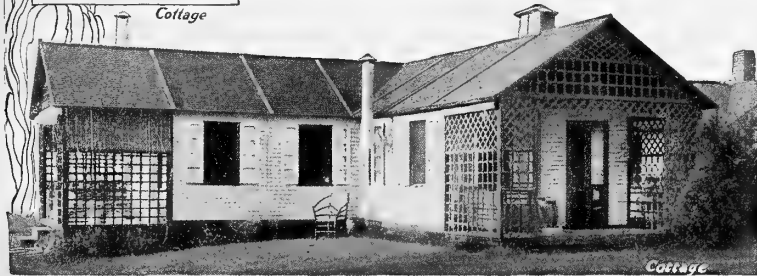
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GARDEN

MAGAZINE

DECEMBER 1917

PRICE 25 CENTS

In This Issue:

Christmas Gifts for the Garden

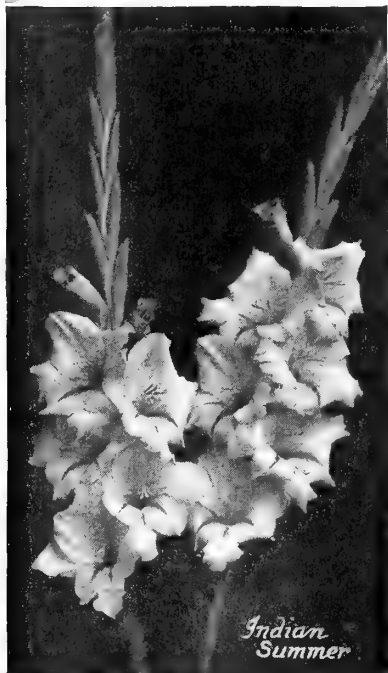
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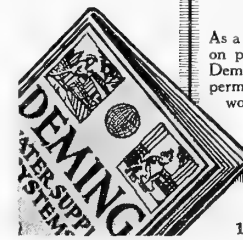
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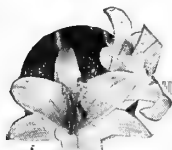
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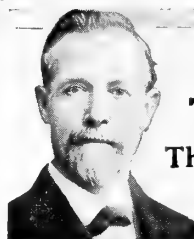
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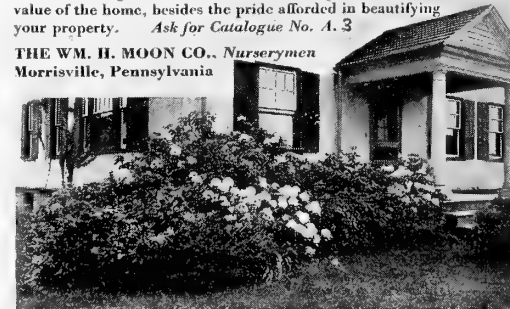
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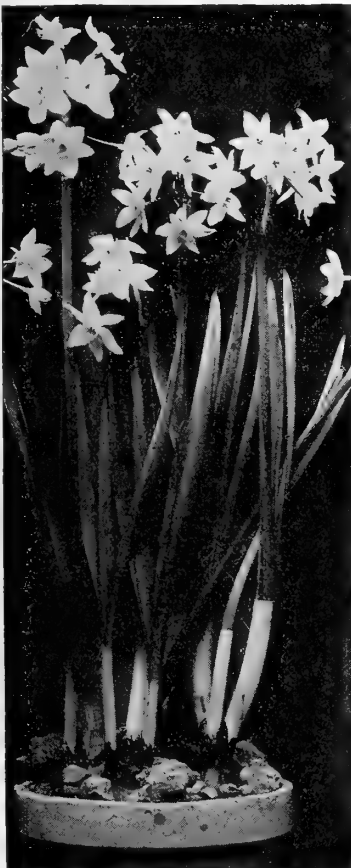
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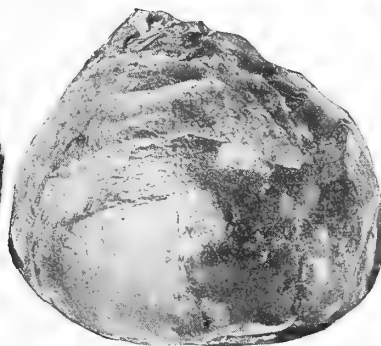
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What to Expect in 1918

Garden Movies for the Beginner:

All during 1917 the editors of THE GARDEN MAGAZINE have been gathering data for this department. It is designed for the beginner who is heeding the "war garden" appeal. Photographs that show "how" and text that tells "what" will help him plan a garden that will help win the war. Here are the topics for each month throughout the year.

January

STUDY OF VARIETIES
PLANNING A GARDEN
EXPOSURE
QUANTITY OF SEEDS
NUMBER OF PLANTS
PRODUCTION VALUE
MAKING A CHART
ADVANCE PLANNING

February

WHAT TOOLS TO USE
HOW TO USE TOOLS
HOW TO CARE FOR TOOLS
THE VALUE OF PREPARING THE SOIL
THE VALUE OF MANURE
GENERAL INFORMATION FOR THE BEG-
GINNER

March

SEED SOWING INDOORS
MAKING HOTBEDS
PREPARING SEED BEDS IN FRAME
QUANTITY AND SPACING OF SEEDS
DIBBLING AND AFTER HANDLING

April

HOW TO PREPARE THE SOIL
HOW TO MAKE DRILLS
HOW TO START THE GARDEN
OUTSIDE SOWING; QUANTITIES, ETC.
SPRING APHIS, ETC.

May

WHY WE HILL PLANTS
WHY WE THIN PLANTS
VALUE OF WATERING IN ROWS
SUCCESIONAL SOWING
STAKING PEAS
SETTING OUT WARM VEGETABLES
TOMATOES, EGG PLANT, ETC.

June

TYING PLANTS
STAKING PLANTS
LIQUID FEEDING
CULTIVATING THE SOIL
GATHERING EARLY CROPS
SUCCESIONAL SOWING
SUMMER BUGS

July

MIDSUMMER WORK
SOWING FOR FALL
IRRIGATION—DIFFERENT METHODS
WATERING REASONS, ETC.
HOW TO PICK VEGETABLES
SELECTING TYPES AND RARE SEED
USING THE GARDEN PRODUCT

August

RIPENING FALL CROPS; ONIONS, ETC.
SOWING SUCCESSION FALL CROPS
VALUE OF SUMMER CULTIVATION
BUGS AND DISEASES TO FIGHT AND
HOW TO FIGHT THEM
PULLING OUT ALL FINISHED CROPS
GATHERING THE FRUIT CROP

September

DIGGING POTATOES AND OTHER ROOT
CROPS
WHY THE WEED MUST BE ERADICATED
GETTING READY FOR FALL
SOWING COVER CROPS
VALUE OF COVER CROPS
FROST PROTECTION

October

SOWING CROPS TO CARRY OVER WIN-
TER
FALL PROTECTION
STORING CELERY, ETC.
STORING PARSNIPS, ETC.
GETTING VALUE FROM YOUR GARDEN
MAKING PLANS FOR NEXT YEAR

November

CLEANING UP THE GARDEN
TRENCHING THE GROUND
LIMING
PUTTING EVERYTHING AWAY
PROTECTING THE CANE FRUITS
PROTECTING THE STRAWBERRIES

December

PAINTING THE STAKES AND TRELIS
CLEANING UP AND REPAIRING TOOLS
FENCING THE GARDEN
GATHERING BEAN POLES
MAKING MELON FRAMES
A SURVEY OF THE SEASON'S WORK

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THE GARDEN MAGAZINE

DECEMBER 1917

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LEONARD BARRON, EDITOR



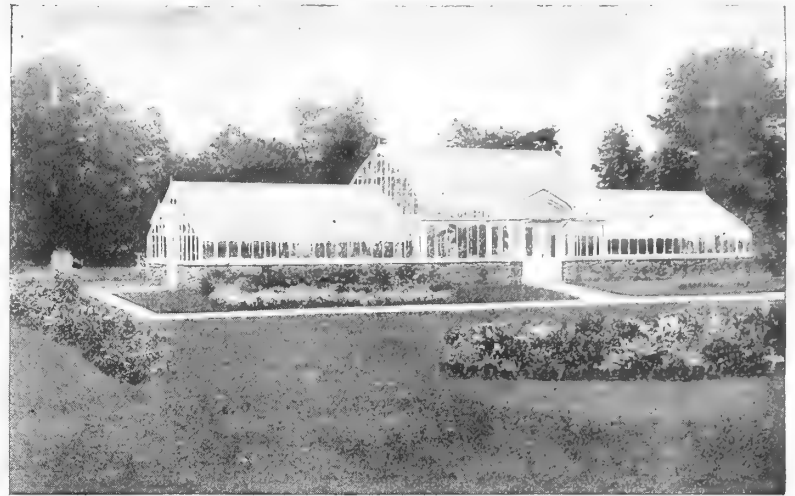
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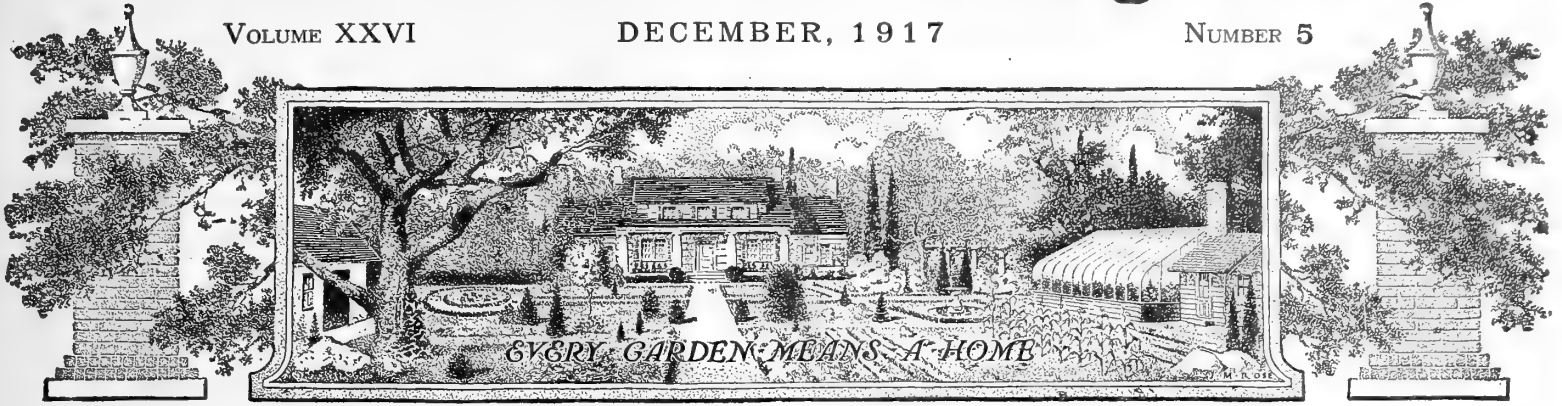
MAURICE FULD
1457 BROADWAY NEW YORK

The Garden Magazine

VOLUME XXVI

DECEMBER, 1917

NUMBER 5



AMONG OUR GARDEN NEIGHBORS

Experimenting With Hunnemannia.—Every year, I try a new (to me) flower and am so delighted with my trial this year that I want to share my find with all the flower lovers who read THE GARDEN MAGAZINE—perhaps they have grown Hunnemannia and, therefore, know all about it, but I will tell my results just the same. Several years ago at the Flower Show at the Grand Central Palace, New York, Max Schling, the 59th Street florist, had a bunch of these beautiful flowers in his exhibit and I at once felt I must have some. I planted an ounce of seed in 1916 but not one came up. Last fall I planted another ounce (from another seed house) in my cold greenhouse and two plants appeared after several months. This spring I made up my mind I would try again and bought another ounce (from a third seed house). I soaked them all night (putting them in hot water) and planted them the next day in the bed in which Nigella Miss Jeykll had grown the year before and many self-sown seeds came up with the Hunnemannia. It's my belief that every seed germinated. The bed has been one of the most beautiful in my entire garden, and now in the bare days of October I am still picking both kinds of flowers every few days. The color of the Hunnemannia is not only a wonderful yellow but the flowers last at least a week, while a Poppy does not last a day.—*Frank H. Presby, Montclair, N. J.*

Tulips and Daffodils Planted Late.—One of the vicissitudes of war that the gardener meets, his inability to secure the customary supply of Dutch bulbs at the usual planting time, need not dishearten him so far as Tulips, Crocuses, and Daffodils are concerned. They may be planted as late as January first and bloom satisfactorily. A few years ago I received as a gift at Christmas time a fine package of bulbs, including Darwin Tulips, named Hyacinths, a mixed assortment of Crocuses, and 100 bulbs of Poet's Narcissus. There was five inches of snow upon the ground and I had very faint hopes for success when I carried the entire assortment to the banks of a little brook that winds through my garden, and planted them. The snow was scraped away with a hoe after which the bulbs were inserted singly and in clumps under the frozen top-soil among the Willows and Dogwoods bordering the stream, and right down to the glassy ice mirror. The snow lasted a few days,

then came two weeks of warm weather during which the bulbs had time to get a hold upon the soil. In the spring I was somewhat surprised to see the Crocuses showing their pretty blossoms with the budding Willows. The Tulips and Daffodils followed, later, but no less beautiful. The Hyacinths did not make satisfactory bloom; the flower stalks were short and the blossoms were crowded together. I think that they failed to make the root-growth required.—*Buford Reid, Osceola, Ark.*

The Topeka Hollyhock Chain.—We have realized so much pleasure through the free distribution of a large quantity of Hollyhock seed to my patrons and friends that I am more than half inclined to extend the privilege to those who may not be fortunate enough



The easily grown Hollyhock was selected to start a chain campaign for civic improvement in Topeka

to enjoy the *privilege* of living in Topeka. I first brought from my summer vacations a small quantity of seed offering them to those who came to my office; and it was a success, as they asked for more. Requests later came from away beyond the transfer man's "field of operations" much to my satisfaction, however. This caused me to think out a plan by which one might interest flower lovers in other cities by offering seeds, and through them influencing the Civic Improvement clubs or committees to take up this matter of systematically decorating the alley fences and unsightly buildings with a perpetual screen of varying colors as it was in Topeka all June and July. To all comers who sent postage (or for nothing if they can not afford that) Hollyhock seeds are given on the promise that: From the "First fruits" they give Three Seeds for Three years or more to Three Friends, flower-lovers. As one seed has produced 85,000 of its fellows, there are immense possibilities in the Topeka "Hollyhock Chain" should it be acted upon by the cities in general. Hollyhocks are hardy, grow in almost any soil, ordinarily require no second planting and bloom and seed abundantly. The "Neighbors" might start a Civic Improvement chain in each of their own towns with but a modest cost compared with the splendid results possible to attain through the systematic planting of one kind of seed throughout the cities. Address (with or without postage), *Clarence D. Skinner, Topeka, Kansas.*

Where to Obtain Rare Plants.—In a recent number of THE GARDEN MAGAZINE you speak of Chinese Bush-cherry, also the Spring Cherry and *Morus acidosa*. From what nurseryman may these be procured.—*J. E. Cannaday, Charleston, W. Va.*

—The Chinese Bush-cherry (*Prunus tomentosa*) can be obtained from Bay State Nurseries, North Abington, Mass.; Framingham Nurseries, Framingham, Mass.; F. & F. Nurseries, Springfield, N. J., and probably others. The Spring Cherry (*Prunus subhirtella*) is not listed by any dealers at present to my knowledge. But try such large growers as Meehan, Moon, and Andorra. It is fairly common in gardens about Boston, and seed may perhaps be obtained in July from the Arnold Arboretum. The new Mulberry (*Morus acidosa*) can as yet be gotten only through the



The home made bird bath (above) and its makings. Household utensils employed

Arnold Arboretum, Jamaica Plain, Mass. It is to be hoped that nurserymen will soon offer it as a food plant for children and birds.—*S. F. H., Mass.*

International Garden Club Journal.—The first number of this new quarterly is quite pretentious, well printed on woodcut paper, and comprises 288 pages. It gives a brief history of the organization itself and describes in detail the grounds and rose gardens which are being developed at the Club's headquarters at Bartow, New York City. The rest of the contents consists chiefly of reprints of papers that have been presented to the Royal Horticultural Society of England and are already available in the *Journal* of that institution; only two of these seven articles are original. The editor's foreword explains that the publication is offered "as a contribution to the advancement of gardening in America," and also "to reflect gardening as it is practised in America." The only contribution in this number which would seem to carry out this purpose is his own (very instructive article) on "Informal and Wild Gardening." American gardening has suffered seriously in the past from having foisted upon it, under the imprint of an American publication office, material which was entirely foreign to domestic conditions; and it seems a pity that an organization evidently able to make a creditable production should start off in a manner implying that there is nothing that can "advance" or "reflect" gardening as it is practised in America.

Streptosolen Jamesoni as a Standard.—Many greenhouse plants are amenable to culture in standard or tree form. These include Geraniums, Fuchsias, Hydrangeas, Lantanas, Heliotropes, Marguerites, Chrysanthemums, Genistas, Buddleias, and last but not least the old *Streptosolen Jamesoni*. Cuttings root readily and should be potted along as they need it and the plant securely staked, all side growth removed and the top pinched, cut when 24 to 36 inches high. Very nice standards may be had within a year in 7-inch pots, but it takes two or three years to produce strong standards which have stems of suf-

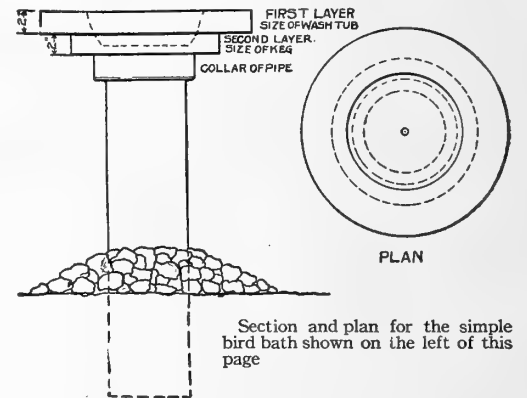
ficient stoutness to stand erect without staking. These *Streptosolen* flower in February and March in an ordinary greenhouse, their pendulous shoots carry terminal racemes of rich orange flowers, and the plants are both beautiful and graceful when in bloom. I have used well flowered plants on large dinner tables and nothing could have been more effective. The plants should be rested somewhat through the summer and pruned back early in August when any repotting or top dressing can be done.—*W. N. C., Brookline, Mass.*

A Home Made Bird Bath.—We selected our largest galvanized laundry tub as a basis for the outer rim. It measured twenty inches in diameter across the bottom. Then we inverted a shallow wash basin in the middle of the tub, being sure that it was exactly centred. This was easy, as the bottom of our laundry tub is decorated with a series of ridges in concentric circles. In the centre of the wash basin we had cut a small round hole, just large enough to admit a short piece of water pipe, or rubber hose, anything to provide a means of emptying the bath when in use. We were now ready for the first layer of concrete. This was mixed in a proportion of about two parts sand to one of cement with water enough to make pretty wet—of easy spreading consistency. Before putting in the concrete we made sure that the tub was standing in an absolutely level position. Then we spread a layer of concrete evenly in the bottom of the tub, surrounding the inverted basin, and making the concrete about two inches deep. This was allowed to stand for a day or two, until partially set, but not hard. When it seemed firm enough to bear the second layer we arranged the form for that purpose by inverting a bottomless mackerel keg on the first layer, centring it by careful measurement. Then the surface of the first layer, inside the rim of the mackerel keg, was slightly scratched and roughened—it was not too hard for that—to give the new layer of concrete a better chance of adhering. The



Streptosolen Jamesoni; an old time greenhouse favorite with orange red flowers

second layer, mixed in the same proportions as the first, was then spread inside the keg, to a depth of two inches, thus covering the wash basin, and surrounding the piece of upright pipe in the centre. This was allowed to set until perfectly hard and dry. We poured water over it gently, once or twice after it was partially set, that it might not set too dry, and be inclined to crumble. This stood in the form for several days. The bath proper was now complete. It remained to place it on a pedestal, and for this we used a piece of drainage pipe, one with a collar about two inches deep and nine inches across. The pipe was planted in the ground, collar up, and around the bottom we piled some loose rock to steady it and give it a good base line. The bath was removed from its form, first



removing the piece of water pipe by twisting it gently, then lifting out the keg, then slipping out the whole structure, by gradually tilting it out of the tub. We set it right side up in the pedestal, loosened the tin basin from the centre leaving a shallow basin of concrete with a hole in the middle, and a four inch rim, or brink all around. A rubber stopper was placed in the escape hole, and the bath was ready to be filled. The drainage pipe pedestal was painted over with a mixture of white concrete paint and cement, about half and half, mixed with water to the consistency of paint. Later on, ivy was planted at the base of the pipe, to twine among the loose rock, and around the column.

Of course any one will understand that the requisites here mentioned as a form for the bird bath are by no means imperative. We explored our basement and used what we could find. The laundry tub could hardly be excelled as a foundation for the first layer, and was in no way injured; it is still doing duty as a laundry tub. Instead of the wash basin one could substitute a shallow wooden chopping bowl, or any bowl shaped utensil, not too deep, and not more than twelve inches in diameter. The finished bath should have at least a four inch rim around the basin. Instead of the mackerel keg any round form could be used—a cheese box, an old flower tub—just so it is bottomless and somewhat smaller than the laundry tub.—*Cleo L. Nettlesworth, Louisville, Ky.*

Hardy Primulas for Unheated Greenhouses.—There are many beautiful hardy spring flowering plants whose flowering season can be advanced several weeks by lifting clumps ere the ground freezes up and planting in even an unheated greenhouse. A few good varieties for this purpose: *P. denticulata* and its form *Cashmeriana* are of the first to bloom, attaining a height of 18 to 24 inches. *P. frondosa*, *P. cortusoides*, *P.*



One of the "capitate" Primulas (*D. cashmeriana*) a gem for the cool greenhouse, flowering in early spring. Flowers lilac

rosea floribunda, *P. elatior* in a variety of colors of which I consider the Giant White and

Yellow forms the best; the true English Primrose (*P. vulgaris* also called *P. acaulis*), *P. Sieboldi*, and *P. japonica*. The forcing *P. elatior*, commonly known as *Polyanthus* are of particularly easy culture and will bloom for many weeks.—*W. N. C., Brookline, Mass.*

Comment on the Broomstick Scratcher.

—It was interesting to read your correspondent's note on "A Broomstick Scratcher," page 40, of the September issue of THE GARDEN MAGAZINE. There may be many a reader who wants the results of just such a tool as that and yet would hesitate to make one for himself. Won't you let it be known, therefore, that there are at least three good tools in the market, for sale at all seedstores of any standing, that will fill the bill. One is the Mehler Handy Gardener; another the Magic Weeder, with either a short or long handle; and the Norcross Cultivators. I have used all three and found them satisfactory. The order in which I have mentioned these means nothing as I wrote them as they came to my mind. Another tool, but one I am less acquainted with, is the Pull Easy Cultivator which is hinged in the middle like a pocket rule and adjustable to any width row. All sell for less than a dollar and are well worth the amount invested.—*S. F. Willard, Jr., Boston, Mass.*



The English Primrose is easily brought into bloom in an unheated greenhouse. Flowers pale yellow

A Touch of Blue in the Fall Garden.—

I have always lots of Chrysanthemums and the hard frosts have not injured any of my plants of the Early Flowering Singles or Pompons; neither, however, has the frost hurt my beds of *Scabiosa japonica*, *Aconitum Wilsoni* or *Aster tataricus*—all fine and worthy of growing. A fine touch of blue at this time of the year (end of October) is something I have never had before.—*Frank H. Presby, Montclair, N. J.*

Making the CHRISTMAS Dollar Buy a Dollar's Worth

OH, THAT! Why, er—That's a *Christmas Present*." Such was the final explanation of the use of a certain unrecognizable article displayed in a department store, when the shopper finally appealed to the floorwalker. And, indeed, how many of the articles that masquerade under the name of "Christmas Presents" can ever be put to practical use?

Ask yourself seriously at this time if you have ever made the best of that season-born opportunity called Christmas, when it comes to selecting logical gifts for the garden hobbyists among your inner circle of friends! The hobbyist is a person full of sentiment about one thing—his hobby. Since Christmas gifts are sentiments expressed in a substantial form, can you imagine a shorter cut to a hobbyist's heart than to present to him something useful in his favorite pastime?

Be a "spug." Turn your Christmas dollars into channels that will increase both the spiritual and material happiness of the recipient of the gift and his esteem of your judgment. Convert your Christmas money into definite objects designed to be of most practical service for a long time to come. Such Christmas presents as are suggested here, will, first of all, convince your gardening friends that you take their hobby seriously—the greatest tribute you can pay them; secondly, by selecting gifts that appeal to their sentiment, besides being of definite usefulness, you are correctly interpreting the spirit of these momentous times when careless spending is a crime, and thoughtful spending represents sound investment.

Invest your Christmas funds in gifts that

live or that help make living more worth while. Never before has the world been as much in need of the peculiar benefits derived from gardening as at the present time. The alluring beauty of the ornamental garden—be it one of trees, shrubs or plants—helps humanity over many trials and disappointments. There is a companionship to be found in the calm presence of the different forms of plant life for which we look elsewhere in vain.

On the other hand, the gardener who works for material returns, will appreciate any gifts that make those returns more certain. A collection of vegetable seeds you yourself have found dependable; a tool that will reduce labor or make it easier; books that will point the way to better gardens; garden furniture that makes living in the garden a true recreation—these are just a few of scores of practical garden gifts which present conditions lift above the commonplace to a position of applied patriotism. Which of the following will best serve the needs of one of *your* garden friends?

Nursery Stock. Live Christmas Trees in tubs (to be planted out later and to become permanent beautifiers). Groups of Evergreens (for screens, hedges, windbreaks, or dwarf kinds for foundation planting, beds or borders). Large Specimen Evergreens or Shade Trees (which may best be moved or transplanted while the ground is frozen). Groves of Trees with attractive foliage; Home Orchards of fruit trees or berry plants; New and Rare Hardy Plants, Roses, Chrysanthemums, etc., to be presented now and delivered in due time.

Seeds and Roots. Collections of Vegetable Seeds (made up of kinds you have tried

and found not wanting). Flower Seeds. Lily-of-the-valley clumps or pips. Roots of such vegetables as may be forced in cellars or under glass, (like chicory, rhubarb, seakale.) If in France, a box of sugar or a bag of flour is considered a distinctly practical and patriotic gift, why not consider such things as will help in food production, in a similar light?

Bulbs for Winter and Summer Bloom. Gift boxes of Canna, Dahlia or Gladiolus bulbs. Narcissus or other winter-flowering bulbs, complete with moss, pans, etc., ready to be combined and started on the road to bloom.

Potted Plants and Decorations. House plants of all kinds, Ferns, Fern Balls, Palms, Azaleas, Spireas and other seasonal plants; wreaths of Christmas Greens, Smilax, Holly, Mistletoe, or any of the cheer-spreading visitors from the woods.

Garden Implements and Accessories. Wheelhoes (to serve as snow plows during the winter). Spray pumps (for active winter spraying or to wash the motor car, spray the chicken house, or as a fire extinguisher). Tools of all kinds (hoes, rakes, trowels, pruning shears, knives, saws). Hotbeds, greenhouses, sash, sprinkling cans, rubber hose, pots, pans, jardiniere, flower stands, etc., etc.)

For Inside and Outside the Garden Home. Porcelain vessels for flowers, Bayberry candles, pottery of all kinds, garden books, garden furniture, pergolas, sundials, gazing globes, birdhouses, weather vanes, etc., etc.

Make this a truly patriotic Christmas by selecting truly useful and practical garden gifts for your practical gardening friends.

THE MONTH'S REMINDER

DON'T GET OUT OF THE TRENCHES TILL CHRISTMAS!

THE month of dreariness—and cheerfulness! While December is the month when Loki—god of the hearth—holds sway, the man or the woman who sticks to indoors is missing not only the out-door fun to be had in one of the really best months in the year, but a great many garden opportunities as well. There is just as much to be done now in the open as there is inside.

Make the Last Days Count!

ATTE^ND first to those things which should be done before the ground freezes hard, such as finishing up any fall planting jobs. Often it is impossible to get some of the hardy Lily bulbs before freezing weather and this year the bulb supply generally has been irregular. Prepare the ground just the same, covering it with strawy manure or other mulching, so that the bulbs can be put in when they do arrive, *even if it is January.*

Root crops, for outside storing that have been left in heaps with a first covering of straw or leaves, will need attention. Put on a covering of soil two or three inches thick, leaving small openings if there is any indication of "sweating."

Don't Get Out of the Trenches Till Christmas!

EVERY day's work that can now be put on, work otherwise done in spring, will be as good as two saved from the busier time. Keep spading or trenching every square foot of garden that is not covered with a winter crop. Go two spades deep, and work into the top "spit" all the manure you can get. Soluble fertilizer must not be put on now, however. There is no necessity of inviting trouble next season by harboring it over winter in your own door-yard; so make a final inspection of the whole place with the specific purpose of destroying every possible source of infection. Cut out old canes of berry bushes; search currants and gooseberries for borers; destroy cocoons and egg-masses anywhere and everywhere and clean up old flats, pieces of board, bits of rubbish of all kinds.

And last but not least—*get after your neighbors, too!*

Get the Winter Ammunition Ready

MAKE ready now for later forcing of rhubarb, asparagus, witloof, and strawberries. Store the chicory roots in a cold cellar (in sand) or in a pit, to be used as wanted; dig around the rhubarb and asparagus roots, so that the whole clump will be loosened; take up and pot in large pots strong-crowned strawberry plants, water and keep dormant in a cold frame till early spring, when they can readily be started several weeks ahead of those outside.

Moving in Midwinter This Year?

NOT your household goods, but a tree or large shrub. Too big to transplant? Not if you get it while its feet are frozen and it can't kick! Transplanted trees die because the required supply of water is interfered with by the disturbed roots. Therefore, transplanting in winter with the roots and earth a solid frozen mass and when there are no leaves or new growth to support is plain common sense. Before ground freezes too hard, dig around tree carefully, making a clean, sharp cut across any far reaching roots and leaving as large a ball as can be handled. Burlap worked around this will help hold the

soil in place. Get another hole ready, in the desired position. Prune the top back when growth starts in the spring.

The Secret of Successful Winter Work

GET out the pruning shears: If buying a new pair, be guided by quality rather than price—a spring that cannot drop out accidentally, and handles that can't pinch your fingers are not mere luxuries. A removable blade is a worth-while feature, saving the price of a new shears in a few years; and a nut that can be adjusted to keep the joint tight is important.

If you are a beginner, look up back numbers of THE GARDEN MAGAZINE (December, 1916, is one) or invest two dollars in Kains' new book "Principles and Practice of Pruning."

DO THIS MONTH

1. Look over your records of 1917.
2. Begin thinking of the 1918 Patriotic Garden.
3. Give final clean-up for all insects and diseases.
4. Take up roots for winter forcing.
5. Get ready for winter transplanting.
6. Bring in bulbs for forcing.
7. Attend to winter pruning of fruit-trees and shrubs.
8. Give the first dormant spray.
9. Start "stock" plants into growth.
10. Fix up flats and tools.
11. Clean old flower-pots and tubs.
12. Get the cutting-bed ready.
13. Plant flower-seeds for spring bloom.
14. Before ground freezes forward spring work wherever possible.

Remember that the first law of pruning is, "the less the better, conditions permitting." [And, by the way, remember that the Editorial Department of the GARDEN MAGAZINE is prepared to assist you in the purchase of any books you may desire].

Winter spraying is every bit as important for the small place as for the commercial orchard. The orchard man who does not spray is utterly outclassed, in fact he can't be found, yet the small place owner who does spray is the exception rather than the general rule. *If you want good fruit, you must spray—* and the winter or "dormant" spray is about as important as the summer spray. It pays also to spray shrubs and other plants that are subject to disease or scale, as a precaution in keeping the garden sanitary. No expensive outfit is necessary. If you have no sprayer get one without delay. We have used compressed air sprayers like the "auto" and small affairs that fit on to the garden hose and use cartridges and have good words for both. The advantages of the winter spray are that the solution can be used at greater strength than in summer time and it relieves the labor pressure in the busier season. Several different dormant sprays are in use including lime-sulphur, kerosene emulsion (winter strength), miscible oils, and others. For the small place, it is generally more satisfactory to get a ready-to-use commercial preparation, than to attempt home mixing.

Get the "Stock" Plants Under Way

IF YOU have stock plants—which may be little more than roots or stubs—on hand from which to obtain a supply of cuttings for early spring, take them from storage under bench, in cool house or frame and start into growth. A good strong firm growth is essential to first quality new plants, so give just as much care and attention from now on, as if they were for the choicest spot in conservatory or window garden. Repot them, giv-

ing a through cleaning and overhauling, and fresh soil. If there are old scraggly worn-out tops, cut back severely. But guard against giving too much manure or nitrogenous fertilizer, which will result in too rapid, soft growth. Plenty of sunshine and plenty of room and fresh air, on the other hand, are desired, as all these make for firm, short-jointed growth. Temperature should be sufficient to assure steady growth, but not to force the plants.

Bring In More Bulbs for Forcing

ALL bulbs in pit, cellar, or frame, that are to be forced for winter bloom, should have made root growth enough by the end of this month to be brought indoors to heat. Start them in "succession" lots, at intervals of two weeks or so. Begin with very moderate temperature, and increase both temperature and water as top growth develops.

When the Days are Stormy

IT IS not a bit too soon to begin getting one's greenhouse in order, against the spring work. In a very few weeks flats and pots and seed pans will be again in demand. Soak old pots for several days, in two or three changes of water, and rub over with sand, to remove dried moss or earth. White-wash or paint tubs or wood plant boxes that are to be used over again. Get new, fresh sand if possible for cutting beds. Or clean the old sand with a weak solution of formalin. After standing a day or so, "wash out" with clean water by putting the treated sand in a pail or box and shoving the hose down into it, letting the water run slowly for some time. Or the sand may be baked. Clean medium coarse sharp sand, such as is used for concrete work, is just the thing for cuttings.

Flowers for Early Spring

DON'T run out of flowers indoors before the outside ones are coming on. Stocks, Mignonette, Clarkia, and a score of other good things may be sown now to keep a full supply when the regular "winter flowers" are beginning to go by. Another easy way of having early flowers in advance of the outdoor bloom is by taking branches [and twigs of the common flowering shrubs, putting them in water and occasionally spraying them and keeping them in a warm and sun-lit place. Judas Tree, Japan Quince, Weigela, Pearl Bush, Golden Bell, Mockorange, Bush-honeysuckle, Flowering Almond, Crabapple, Van Houttes' Spiraea, Lilac, Wisteria—all of these may be used in the manner suggested. And, of course, the Willows; any of them will push out their downy buds under the slightest stimulus.

Get Your Garden "Dope" Ready!

NEXT month you will once again be planning your vegetable and flower gardens, and the January GARDEN MAGAZINE will open the new year's new Patriotic Garden campaign by serving you to its best ability. One special feature will be a new planting scheme for the home garden based on actual observations of last season's gardens. We shall tell you how to employ modern scientific industrial management to the home vegetable garden. All last summer careful records were kept to ascertain just *how few plants* of a given kind, just *how short a row* was essential to supply the requirements of a definite number of people. All this, with succession planting charts will be laid before you next month.

Encouraging the Birds

ALICE LOUNSBERRY

BIRDS are the pampered darlings of the hour. From being so indifferently treated by mankind that they fled before his footsteps, they have become the most catered to and sought after creatures of the open. Over the whole country sanctuaries for the feathered world are steadily increasing in numbers; while alone in the vicinity of New York City three of notable proportions have been established recently. Smaller and more simple bird gardens have as well become a reigning interest.

The farmer who a few years ago watched, with surly humor, the birds feeding in his grain fields, nipping holes in the sides of his largest cherries, feasting royally in his strawberry patch, is now, through increased knowledge, content to share with them the products of his labors. He has learned that his one-time use of a shotgun and his ungainly scare-crows were merely effectual in driving away the helpers with which Dame Nature had provided him. For as the birds flew off to less man-governed places the insects began to flourish unhindered, driving sleep and prosperity away from whole agricultural districts. Today it is believed that a single martin will consume, as his daily diet, a million mosquitoes; nesting boxes therefore are hung up for his occupancy. In fact bird protection in various forms is pursued for ethical and artistic reasons as well as for its commercial benefits.

Not all those interested in the preservation of native bird life, however, can set aside ten acres or thereabouts for the building of an important sanctuary, although it fortunately happens that the greater number of country dwellers are able to add to their possessions a bird garden.

From the beginning fashion has played its part in gardens, no less in America than in other countries. The bird garden, the latest desideratum, has followed

perhaps in the wake of the naturalistic garden to which many landscapes have an especial suitability. Yet so new is the conception of such an enclosure that the question is frequently asked: "What is a bird garden; in just what way can it be built?"

THE GARDENER'S PARTNERSHIP WITH NATURE'S HOSTS FOR THE FIGHT AGAINST INSECTS.—PLANTING TO ATTRACT THESE ALLIES

Feeding her young. Where hosts of insects go

ABIRD garden, whether so large as to be called a sanctuary or so small as to be merely a shelterwood, is an enclosed place in which birds are protected from their enemies; provided with food throughout the year; and wherein those that nest in the open and those that nest in holes are given opportunities for breeding.

Of course before starting a bird garden the character of the land must be closely studied; a swampy thicket would require different treatment from a hilly district or from one composed of flat meadows. The birds of each locality must be observed, also it must be learned which others are likely to be attracted, once the chosen site is made attractive to them. Birds long absent from a neighborhood will find their way back shortly after conditions that make their lives comfortable have been provided.

But no thought of a sanctuary or bird garden should be entertained unless there is complete willingness to protect its inhabitants from their enemies, and in the personalities of household cats are found their most implacable foes. Weasels, rats, and martens also disturb nesting birds, but their influence is slight in comparison with that of the cat which prowls by night and by day insatiable in his desire. Traps that are set for such should in every case be well hidden; barbed wire is also used in various ways as a menace and hindrance to his movements. Still neither of these devices is equal to the determination of a nine-lived cat.

Necessity therefore has led to the invention of a cat-proof fence. It is made of wire mesh having a hooded arrangement at the top and so shaped that should the cat climb sufficiently high and attempt to leap over, he would be thrown back to the ground. To enclose a bird garden with such a fence is the first important step in its building.



Berried shrubs that provide food for the birds are also gratifying objects in the garden in winter (*Viburnum opulus*)

BIRDS themselves are winged voyagers. They like to come and go ad libitum. The seething sentiment of migration sets them on the wing. No sanctuary has for its purpose the restraining of their freedom. At will they can soar up into the air and pass over the fence and away. Yet there are birds that seem to grasp immediately the meaning of a fence. At Baron von Berlepsch's preserve in Germany, the most scientific sanctuary in the world, many birds consistently make their entrance and exit through the time-worn holes in the gateposts of the old castle that guards the entrance. At one of the sanctuaries in America the gateposts have had holes drilled in them and through these openings the birds slip in and out constantly. The arrangement adds greatly to the romance of the spot.

AS SOON as the fence is erected, shutting off the enclosure, trees or thickets of high shrubbery should be planned like background lines hiding it from view. By keeping such growth on the edges of the garden it is given form and the same sort of definiteness that a hedge lends to a flower garden. Often there occur natural thickets that can be left untouched. The undergrowth of topped trees, when these are so handled on account of view or because of certain proportions desired in the garden, should be preserved, as apart from its value for game birds it offers to others natural breeding places.

In fact brushwood piles should form a feature of both coniferous and deciduous thickets as it is such places that many song birds, nesting in the open, choose for their homes. Shubbery can also be so pruned as to make it especially habitable to birds; and branches tied together often attract the round, shrewd eyes of those on the lookout for nesting sites.

NATURALLY the individual peculiarities of the shrubs used in a bird garden must be taken into account. In general those that stand well severe pruning are to be favored since the inducement they thus receive to throw out new growth freely is apt

to result in admirable recesses for birds. Shrubs for shady places, likewise those that demand full sunlight must be included and also those which by means of thorns act as enemies to vermin. The Shadbush, Mountain Ash, and the Tartarian Bush-honeysuckle, the Elder and the Cranberry tree (*Viburnum opulus*), are all well known, suitable, and

hips of which birds devour, should be given entrance. The Mulberry furthermore has the credit of having its fruit approved by more varieties of birds than that of any other small tree. The Common Privet (*Ligustrum vulgare*) is useful to fill in gaps in the thicket wherever such are likely to occur. The European Beech (*Fagus silvatica*) which holds its

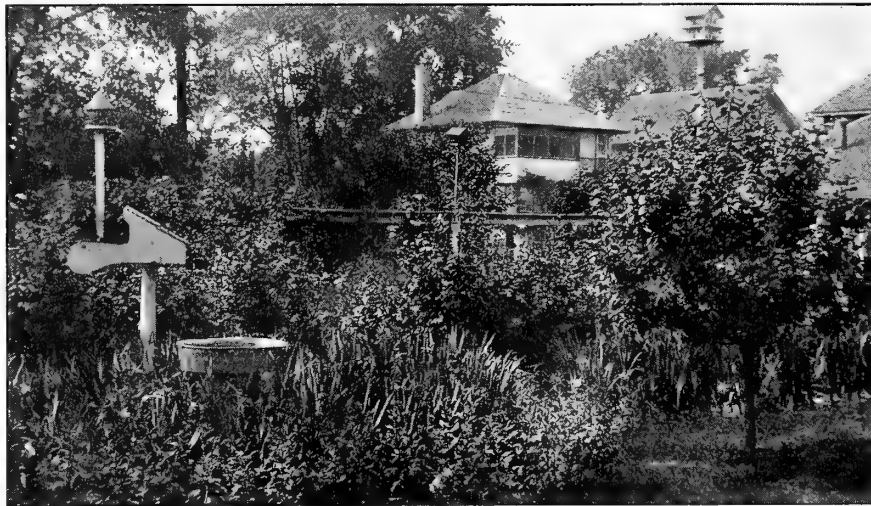
foliage later in the autumn than the American species is suitable for the rich soil and decorative sections of the garden. The Hornbeam (*Carpinus carolina*), which likes to grow near water is attractive, when the garden includes a stream, to plant along its banks. *Ilex verticillata* with its red winter berries, *Juniperus virginiana* (Red Cedars), pollarded Firs and Norway Spruces, the latter admirable in shape for a bird shelter-wood, are among the most important of the evergreen trees that should be arranged like accents among the deciduous shrubbery.

And these mentioned trees and shrubs are notably those familiar along roadsides, as escapes from culti-

vation, as the inhabitants of borders of woods or haunting the banks of streams. They are not classed among costly rarities. To form of them a shelter wood is within the ability of the greater number of country home dwellers; while to draw the birds into friendly nearness is to add to the joy of life. Any of these plants may be as safely transplanted during the open spells of winter as at any other time.

IT IS not only marsh birds that require water in the vicinity of their nests. This is true of them all. Therefore one of the first considerations in bird garden building is the water supply. When the garden is small, of level, dry ground having no lake, spring or stream, this need can be met by a fountain; again it can be supplied by numerous bird basins. Very early in the morning birds are astir for food and drink. In the successful bird garden they must not be disappointed.

Innumerable are the bird baths and fountains now on the market. The practical ones,

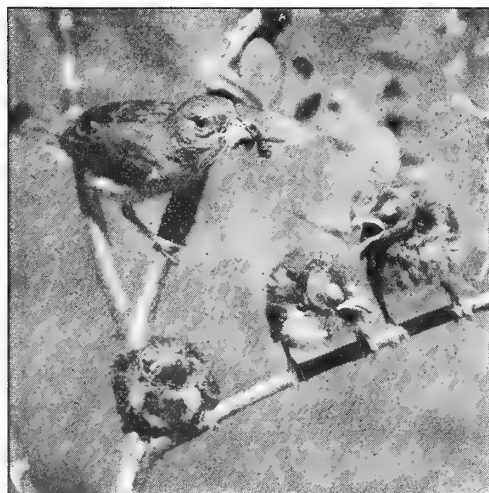


The bird garden is best enclosed and appropriately designed houses for particular birds may readily be purchased

SHRUBS AND TREES ATTRACTIVE TO BIRDS

MARCH, APRIL—Thunberg's Barberry.
 JUNE—Shadbush, Juneberry.
 JUNE, JULY—Red-berried Elder, Ruprecht's Honeysuckle, Wild Red Raspberry.
 JUNE, JULY, AUGUST—Blueberries, Black and White Mulberries.
 JULY—Wild Strawberry, Thimbleberry, Wild Red Cherry, Wild Black Currant, Morrow's Honeysuckle, Bush-honeysuckle, Tartarian Honeysuckle, Mahaleb Cherry, Mountain Currant, Buffalo Currant, Japanese Oleaster, Japanese Viburnum, European Bird Cherry, Goumi.
 JULY, AUGUST—Wild Sarsaparilla, False Spikenard, Sassafras, Highbush Blackberry, White-fruited Dogwood, Smoke Tree.
 AUGUST—Black Cherry, Choke Cherry, Purpus's Dogwood, Wayfaring Tree, Arrowwood, Pubescent Viburnum.
 AUGUST to MARCH—European White Birch.
 AUGUST, SEPTEMBER—Black Birch, Gray Cornel, Silky Cornel, Red-osier Dogwood, Alternate-leaved Cornel, Beach Plum, Common Elder, Dewberry, High Blueberry.
 SEPTEMBER—Climbing Bittersweet, Moonseed, Cranberry-tree, Arrow-wood, Black Haw, Witherod, Sweet Gum, English Fly-honeysuckle, Canby's Viburnum, Thorns, Sea Buckthorn, Common Barberry.
 SEPTEMBER to MARCH—Crabapple.
 SEPTEMBER to JUNE—European and Japanese Larches.
 SEPTEMBER, OCTOBER—White Thorn, Tupelo, Sour Gum, Northern Fox Grape, Silver Thorn or Oleaster.
 SEPTEMBER, NOVEMBER—Sheepberry.
 SEPTEMBER, WINTER—Flowering Dogwood, Hackberry, Nettle-tree, Spice Bush, Snowberry, Inkberry, Black Alder, American Holly, American Mountain Ash, European Mountain Ash, Red Cedar or Savin, Common Juniper, Poison Ivy, Checkerberry, Partridge Berry, Pikeweed, Barberry, Common Greenbrier, Bayberry, Privet or Prim, Virginia Creeper, Common Nightshade, American Hornbeam, Cockspur Thorn, Wild Rose, Staghorn Sumach, Dwarf Sumach, Smooth Sumach, Buckthorn.
 OCTOBER—Dogwood, Crabapple, Spindle-tree.
 NOVEMBER—Frost Grape, Chicken Grape, Matrimony Vine.
 DECEMBER—Sweet Birch.
 FALL, WINTER—Weigela, St. John's Wort.

(Compiled from *Journal of the N. Y. Botanical Garden*, February, 1917.)



Many insects wanted for one meal! (Indigo bird)

decorative in a bird garden. The White or May thorn (*Crataegus oxyacantha*), with its large, spikelike thorns is not to be overlooked. The garden gooseberry, also rich in spines, is valuable for this reason in addition to that of its fruit. Barberries, both the common and Japanese species, are excellent for low hedges; and the native *Rosa carolina*, the



He likes currants (Brown Thrasher)



Caught in the act! A small price to pay for the great rewards reaped in insect destruction (Cedar Bird)

however, are those in which the water is not so deep that there is danger of the bathers drowning and which have for utility a rim or cross-section so arranged that the birds can perch thereon while drinking.

The feature of endurance in a bird garden, built on ground other than swampland, is often the fountain. As soon therefore as the fence and the boundary lines of trees and shrubbery are set this important bit of furniture should fall under consideration. Happily it is one that permits of individual expression. The central portion of the garden is often the place where, as in the selection of the fountain, the personality of the owner sounds the note of decision.

A FEW bird gardens show the whole naturalistic in treatment, the centre as well as the edges developed in masses of shrubs and plants bearing berries and seeds on which birds love to fatten. Informal paths, taking unexpected curves are made through such gardens and the open spaces that occur left in untrimmed turf. A garden of this nature, however, is apt with time to develop into a veritable thicket or jungle, one in which the human element experiences similar sensations as when visiting a wild woodland.

A design more generally pleasing is that which keeps the centre of the garden somewhat formal, perhaps after the plan of an old English or Colonial garden, and which is enclosed with a low hedge through which vistas open into the more dense planting beyond. The birds learn to pass blithely through these openings and it is a pretty sight to see them amusing themselves for awhile in the open garden and then as with hearing a call from the wild to take to the wing and move swiftly out of sight.

In the inner, central portion of the garden a few tall Sunflowers should stand like sen-

tinels since they produce seeds that many birds love to eat: California Poppies, for the same reason, should be grown in numbers, likewise Zinnias and Coreopsis.

Honeysuckle and Trumpet Creeper are desirable vines to cover pillars and arches as at the base of their flowers is the nectar sought by hummingbirds. The wild Clematis should be given a generous footing; also the bitter-sweet (*Celastrus scandens*).

IT IS not difficult to provide birds with food during the season of warm, luscious weather. The care then should be not to overstock the garden with houses and to bring together more birds than there is food supply. Baron von Berlepsch regards as one of his chief reasons of success that he has attended to an able management of his commissary department. He knows just how much food is supplied to each section of his garden and how many birds it will feed. But with observation the amateur soon gauges the appetites of his birds for when they are not satisfied, no matter how seductive the garden, they take to the wing, seeking other quarters.

OF COURSE to attract the birds, houses and nesting boxes must be put up. At the present time there are a number of builders of scientific boxes all of which have had an influence in furthering bird comfort. The owner of a garden has naturally to select such boxes as are likely to attract the birds peculiar to his locality and then to follow the directions for hanging and their care, which includes cleansing, sent out by their makers. To hang a nesting box well and securely, so, furthermore, that it gives the bird on the nest protection from draughts and driving rains, is of the utmost importance.

THE list of birds that can usually be attracted to the average garden in the northeastern states is both long and varied and includes: blue birds, red-winged blackbirds, catbirds, chats, cedarbirds, yellow-billed cuckoos, cardinal birds, chickadees, finches, flycatchers, grouse, hummingbirds, bluejays, juncos, kingbirds, martins, orioles, quail, robins, scarlet tanagers, sparrows, swallows, thrashers, thrushes, vireos, woodpeckers, warblers, and others equally well known.



The Woodpecker is surely a great carpenter and bores the fruit tree borers to death



A scientifically constructed house providing protection as well as shelter. The food tray below also prevents assaults by post climbers

Woodpeckers are indeed the carpenters of the bird world and among some of the best boxes now procurable are those made in imitation of their holes. They themselves, however, are not readily deceived into substituting their craftsmanship for that of others.

ONE of the most beautiful water bird gardens in this country may be described as having been built by accident. Its designer, possessed of several acres of swampland on Long Island, held as her original determination that of turning what was regarded as a detriment to her neighborhood into an Iris garden. In fact she patterned it after a famous large one in Japan, one in which Iris blooms traverse and color the earth like clouds to the sky. The engineering feat of the undertaking was to erect parallel dykes through the swamp so as to confine the water in distinct channels and then to plant the sides of these dykes with Irises. As the plan unfolded it began to be noticed that water birds were coming to the spot apparently from all directions. A shelter wood, one of the requisites of birds that breed near water, was soon added to the planting; and as a result red-winged blackbirds, swamp song sparrows, marsh wrens, yellow throats, kingfishers and water thrushes began to look upon this garden as their home. Besides supplying the bushes that would be useful to birds not nesting on the ground, boxes were put up for others not especially identified with swamp life. Thus a surprising number of birds eventually came to the garden and the objectionable marsh became an Iris bird-garden of a quality of loveliness appealing strongly to the imagination.

WINTER is the time when the bird-garden needs most the provident care of its builder. For in spite of the hundreds of birds that migrate there are many others that love to cling to the North throughout the year. Food trees and bells, weathervane feeding tables, all of which are now on the market, should occur at intervals throughout the planting ground and their store of grain and suet must not fail.

A precaution to be taken is that these preparations to keep the native song birds near the home do not benefit the English sparrows. For these birds are noisy and so wildly behaved that many song birds will not dwell near them. It is inevitable, therefore, that traps should be set for them and their nests destroyed.

A Glance at the Garden Books of the Year

NOTWITHSTANDING the fact that the period of 1917 took us well into the fourth year of the great war, it is noticeable that the book publishers have been quite active in adding to and extending their lists of gardening publications. Hitherto the times of the war or any other general depression have been reflected immediately by cessation of publishing activity.

The most important occurrence of the year is the completion of the Standard Cyclopedia of Horticulture (six volumes) which is the pivot on which all other minor books swing. It clarifies our gardening knowledge and gathers together in authoritative and convenient form the records of the materials available at this time. This book has already been reviewed at length in these pages. To the gardener who merely wishes to possess an authoritative list of plant names with dates of introduction, country of origin, etc., and incidentally every name translated into an English equivalent, there is the smaller handy Johnson's Gardeners' Dictionary, a revised edition of a work long recognized as an authority in England, the original of which appeared seventy years ago. As a guide to gardening materials of superlative quality E. H. Wilson's "Aristocrats of the Garden" is a book that should well be in every progressive gardener's library, based on years of experience and observation both as a gardener and botanical collector and traveller. It deals more particularly with the hardy garden and takes cognizance of some 800 species and varieties. Responding to a demand for handy volumes in color that would serve for identification of the popular plants of the garden are the four little volumes entitled "The Pocket Garden Library," each one being devoted especially to the materials of one season. The four volumes contain about a thousand illustrations with condensed cultural instructions and details of popular interest. In same style and uniform in general appearance the publishers announce an early appearance of the Western Flower Guide, with 250 illustrations.

The publishers of the "Rural Science Series" naturally continue to add to this excellent library of manuals. A timely volume on the "Potato" is included; another is devoted to the "Strawberry," which is supplemented by a volume that deals with the history of the strawberry in North America. Many people will also be pleased to find a new edition of Prof. Card's excellent manual on "Bush Fruits." From another house, Duggar's "Mushroom Growing" and Brown's "Modern Fruit Marketing" are also timely publications.

It is curious that in the period under review we have not been given a single volume devoted to insect pests, possibly because several appeared just before. On the other hand, we have the "Manual of Fruit Diseases" by Hesler & Whetzel, "The Culture and Diseases of the Sweet Pea," and an imported volume devoted to Tree Wounds by A. D. Webster, which is the most comprehensive general book of that nature, but suffers, as is inevitable with all imported books in treating its subject from other than American conditions.

Of volumes devoted to general pleasure gardening and landscape architecture, there are several of decided merit. The demand for actual plans for the small home garden is met by three volumes—"The Book of Garden Plans" by Hamblin, a small business-like presentation of typical plans; "Practical Landscape Gardening" by Robert Cridland,

designed particularly to fit the man of small means who wants to be his own landscapist; and Miss Dean's "The House Livable; Its Garden" which forms one volume of the series devoted to the treatment of the house and home in its separate parts. In this category will come Mrs. Wilder's "My Garden," a book of remarkable interest and probably the most interpretative, inspirational and practical garden book for the American amateur that has yet appeared. The author tells about her garden and her experiences. "Studies in Gardening" by Clutton-Brock, is a reprint of an English book and is a delightful series of essays on the general theory and practice of the gardener's art.

Its treatment is so general and deals so thoroughly in fundamentals that it will be found equally valuable to the American reader especially in view of the annotations that have been made by Mrs. Francis King. Miss Duncan's "Joyous Art of Gardening" is well designed to encourage the beginner and to lead him by easy degrees into a keener and better appreciation of the joys of cultivating the home surroundings. Students of landscape gardening will be interested in the "Hints on Landscape Gardening" by Prince von Pückler-Muskau, a volume made up of selections from the writings of this master craftsman, edited by Samuel Parsons. It is a welcome addition to the educational landscape gardening library, started two or three years ago by Houghton Mifflin Company. After a lapse of many years we welcome a new volume on "Greenhouses; Their Construction and Equipment," by W. J. Wright. A period of twenty years has elapsed since Prof. Taft's classic volumes on this subject appeared, and a great deal of knowledge has accumulated. As an accessory to this there is Watts' "Vegetable Forcing" and "The Garden Under Glass" by Rowles, an importation which will be useful to the cultivator qualified to interpret for himself European practice in the light of American experience.

In the manuals of general practice we are given two volumes devoted to pruning—one by L. H. Bailey; the other by M. G. Kains. Both are valuable to the advanced student. Kains last year gave us a volume on "Propagation of Plants," dealing with the subject chiefly from the nurseryman's aspect. And we now have Hottes's "Commercial Plant Propagation" which make a more direct appeal to the amateur gardener, inasmuch as it deals with the kind of plant with which he is the more likely to be associated. The war garden activity and the possibility of turning the yield of the soil into actual profit has had its natural reflection in the appearance of a few volumes that interpret the profitable side as well as the pleasureable side of the home garden. The most recent is "Around the Year in the Garden" by F. F. Rockwell, which is a chatty and comprehensive volume cast in the mold of seasonal reminders carried through from one year's end to the other. "Every Man's Garden in War Time," by C. A. Selden, is a reprint of that author's "Every Man's Garden Every Week" makes its strong appeal to the veriest tyro in garden activities. The little volume "How to Make the Garden Pay" comprizes two or three chapters on the handling of vegetables in the very small garden. And "Second Wind" by Freeman Tilden, deals with the subject "Back to the Land," written in a style of romance and is full of enthusiasm.

The juveniles have not been forgotten.

Miss Duncan's "When Mother Lets Us Garden" is a delightful, inspirational book, written by one who knows her garden practice from beginning to end and who wraps up the whole matter in an atmosphere of real delight. "Mary and Her Kitchen Garden" is a light romance in which potatoes and radishes, and peas and onions figure portentously. And for those who wish to have the fanciful and legendary side of the plants of the garden, there is: "Flower Lore and Legend" by Katherine Beals. Details of the more important books for gardeners published during 1917 follow (the price quoted includes postage.)

Encyclopedias, Manuals, Etc.

- ARISTOCRATS OF THE GARDEN: by Ernest H. Wilson. (Doubleday, Page & Co.), \$5.50. Reprinted from THE GARDEN MAGAZINE. Deals with the best materials for the best gardens of America.
- CYCLOPEDIA OF HORTICULTURE Vols 1-6: by L. H. Bailey. (The Macmillan Co.), \$39.60. A compendium of gardening practice and available plant materials in America.
- JOHNSON'S GARDENERS' DICTIONARY AND CULTURAL INSTRUCTOR: edited by J. Fraser, importation (DeLaMare). \$6.60. Chiefly useful as a reference list of plant names giving date of introduction and an English equivalent for each name.
- THE GARDEN GUIDE (1917)—The Amateur Gardener's Hand-book. (DeLaMare Co.), 75 cents. An annual of miscellaneous and statistical material.
- PRODUCTIVE PLANT HUSBANDRY: by Davis. (J. B. Lippincott Co.), a text-book for high schools covering a wide range of information on plant propagation, plant breeding, soils, gardening, insects, plant diseases, etc.
- POCKET GARDEN LIBRARY in four volumes edited by Leonard Barton. (Doubleday, Page & Co.), \$1.65 each.
- FLOWERS OF SPRING: by Ellen Eddy Shaw. FLOWERS OF EARLY SUMMER: by Ellen Eddy Shaw. FLOWERS OF LATE SUMMER: by Ellen Eddy Shaw. FLOWERS OF WINTER—INDOORS AND OUT: by Montague Free. Each volume has about 250 color plates of popular plants and flowers for quick identification.
- FLOWERS WORTH KNOWING (Adapted from Neltje Blanchan's Works): by Asa Don Dickinson. (Doubleday, Page & Co.), \$1.65. A popular guide to the commonest wild flowers. Illustrations in color.
- THE HUMAN SIDE OF TREES: by R. Dixon & F. E. Fitch. (F. A. Stokes Co.), \$1.60. Shows that the forest giants are living, growing, thinking creatures, with definite habits of thought and efficient business methods. Illustrated in color.
- THE MYSTERIES OF THE FLOWERS: by Herbert W. Faulkner. (F. A. Stokes Co.), \$2.20. An interesting treatment by an artist-naturalist of the mysteries in wild flower life. Illustrations in color and black-and-white.
- TREES WORTH KNOWING: by Julia Ellen Rogers. (Doubleday, Page & Co.), \$1.65. Popular stories concerning the common trees of our forest and woodland.
- WAYSIDE FLOWERS OF SUMMER: by Harriet L. Keeler. (Scribner.) Flowers and herbaceous plants that bloom along Northern roadsides in July and August popularly described.
- WESTERN FLOWER GUIDE: by Charles Francis Saunders. (Doubleday, Page & Co.), \$1.65. Uniform with the Pocket Garden Library and dealing with the common wild flowers of the West. Illustrations in color.

Special Plants

- BOOK OF THE PEONY: by Harding. (Lippincott), \$6.60. A manual on this popular flower, giving classification, culture, etc.
- PRACTICAL BOOK OF OUTDOOR ROSE GROWING, Garden Edition: Thomas. (Lippincott). A popular edition of a very successful and reliable book, \$2.20.

Special Fruits and Vegetables

- BUSH FRUITS: by F. W. Card, new edition. (Macmillan Co.), \$1.93. Deals with the varieties, cultivation and general practice of bush fruit growing.
- MODERN FRUIT MARKETING: B. S. Brown (Orange Judd Co.), \$1.93. Harvesting, packing, storing and selling.
- MUSHROOM GROWING: by J. B. Duggar. (Orange Judd Co.), \$1.65. Mushroom culture on up-to-date methods.
- THE POTATO: by A. W. Gilbert. (Macmillan Co.), \$1.50. About all there is to be said of this crop from all standpoints.
- THE STRAWBERRY IN NORTH AMERICA: by S. W. Fletcher. \$1.65. STRAWBERRY GROWING: by S. W. Fletcher. (Macmillan Co.), \$1.93. These supplement each other. The former is a history and the other is a manual of cultivation, preparation, selling, etc.

Pathology

- THE CULTURE AND DISEASES OF THE SWEET PEA: by J. J. Taubenhaus. (E. P. Dutton & Co.), \$2.20. The result of five consecutive years devoted to research on the diseases of the Sweet Pea.
- MANUAL OF FRUIT DISEASES: by L. R. Hesler & H. H. Whetzel. (Macmillan Co.), \$2.20. The known facts referring to the common diseases of the orchard and methods of control.
- TREE WOUNDS AND DISEASES: by A. D. Webster. (Lippincott Co.). Importation, \$2.75. Causes of injury and methods of remedy and repair.

General Landscape Gardening

A GARDEN DIARY AND COUNTRY HOME GUIDE: by Loring Underwood. (Stokes), \$3.85. A page for each day of the year is divided into four parts, in which to record the observations of four successive years. Short seasonal reminders.

BOOK OF GARDEN PLANS: by Stephen F. Hamblin. (Doubleday, Page & Co.), \$2.20. Twenty typical plans in blue prints, representing diversified actual problems.

HINTS ON LANDSCAPE GARDENING: by Prince Von Pückler-Muskau. Edited by Samuel Parsons. (Houghton Mifflin Co.), \$3.85. An entertaining work and an addition to the series of landscape classics that the publishers have undertaken.

THE JOYOUS ART OF GARDENING: by Francis Duncan. (Scribners), \$1.93. For the owner of the small place, who works among flowers.

THE LIVABLE HOUSE—ITS GARDEN: by Ruth Dean. (Moffat, Yard & Co.), \$2.75. Treating the garden from its artistic side as part of the house. Illustrated.

MILADY'S HOUSE PLANTS: by F. E. Palmer. (DeLaMare), \$1.10. A guide to managing flowers and plants in the home and Ideal Sun Parlor.

MY GARDEN: by Louise Beebe Wilder. (Doubleday, Page & Co.), \$1.65. A story of the year in the author's garden, her experiences and trials and triumphs.

PRACTICAL LANDSCAPE GARDENING: by Robert B. Cridland. (DeLaMare Co.), \$1.65. A general treatise on the home garden for the man of moderate income.

STUDIES IN GARDENING: by A. Clutton-Brock, Introduction and Notes by Mrs. Francis King. (Scribners) \$2.20. It is in the belief that Mr. Brock's charming studies are of the best of all gardening literature that Mrs. King

has supervised their American publication. Mr. Brock writes of English gardening, but so largely of the general theory and practice of the art that his work is equally valuable in America.

Greenhouse and Allied Subjects

THE GARDEN UNDER GLASS: by Rowles. (Lippincott Co.). An importation and possessing all the limitations incident to foreign practice.

GREENHOUSES: THEIR CONSTRUCTION AND EQUIPMENT: by W. J. Wright. (Orange Judd Co.), \$1.75. Deals with the practical problems of building, heating, etc.

VEGETABLE FORCING: by R. L. Watts. (Orange Judd Co.), \$2.20. The result of several years' practical work and in teaching. Chiefly commercial.

Manuals of Practice

COMMERCIAL PLANT PROPAGATION: by Prof. Alfred C. Hottes. (DeLaMare). Well described by its title.

PRINCIPLES AND PRACTICE OF PRUNING: by M. G. Kains. (Orange Judd Co.), \$2.20. A general manual for the student and nurseryman.

PRUNING MANUAL: by L. H. Bailey. (Macmillan Co.), \$2.20. Devotes much attention to the fruit grower.

SOILS AND FERTILIZERS: by F. L. Lyon. (Macmillan Co.), \$2.20. Embodying up-to-date principles in modern practices.

Cashing In, The Profits

AROUND THE YEAR IN THE GARDEN: by F. F. Rockwell. (Macmillan Co.), \$1.93. A "reminder" book of definite instruction for the unskilled amateur.

EVERYMAN'S GARDEN IN WARTIME: by Charles A. Selden. (Dodd, Mead & Co.), \$1.48. A reprint of Selden's "Everyman's Garden Every Week."

HOW TO MAKE THE GARDEN PAY: by Edward Morrison and Charles Thomas Brues. (Houghton Mifflin Co.), 83 cents. It tells how to raise vegetables for home use and how to raise them profitably.

SECOND WIND: by Freeman Tilden. (B. W. Huebsch), \$1.10. The ancient theme of the man who went "back to the land" with a new touch which makes it read like romance. The story of a middle aged man who actually did go back to the land.

Juveniles

FLOWER LORE AND LEGEND: by Katharine M. Beals. (Henry Holt and Co.), \$1.38. Fascinating old stories retold charmingly.

MARY AND HER KITCHEN GARDEN: by Alice Crew. (George H. Doran Co.), \$1.38. Alice Crew has written the verses and Lee Wright Stanley has drawn the pictures that make this book fascinating and instructive. Radishes and potatoes and peas and onions become very real factors in the life and in the dreams of Mary.

THE TREASURE OF THE LAND: by Garrard Harris. (Harpers), \$1.32. Deals with tomato canning contests for girls.

WHEN MOTHER LETS US GARDEN: by Frances Duncan. (Moffat, Yard & Co.), 83 cents.

[NOTE:—For the convenience of subscribers the Garden Magazine Editorial Dept. will gladly execute commissions for the purchase of books of all publishers.]

Vegetables for Under Glass Culture A. KRUEHM

EAT less, produce more—that is the slogan of the moment. Making the available supplies go the farthest is the basic idea in all nations nowadays. England is proceeding on the plan that it was better to provide maximum supplies, while the Central Powers put the people on minimum rations. Three times in three years the system of the Central Powers has been changed in an attempt to convert it from a failure into a practical success. England to-day, in many respects, is better off than we are.

In democracies, like England and America, it is easier to get people to produce more than to get them to eat less. In this matter of food production, GARDEN MAGAZINE readers (as has been pointed out repeatedly), stand in a singularly peculiar position for the playing of an important part. At this particular season, every owner of coldframes, hotbeds, or greenhouses, should strain every nerve to produce two pounds of green food where only one grew before. The following list of pedigreed vegetables suggests quality types and strains that yield well—strains of proven merit for under-glass gardening.

Practice intensive cultivation. By selecting varieties, types, and classes adapted to your particular space and equipment, you may be able to raise four rows in the place of three, and to grow three crops in the place of two, between January and May. Studying the approximate time required for crops to reach edible size, as given below, should enable you to work out a perfect programme, just as you do for your outdoor garden.

The most popular vegetables for under glass rank as follows:—Beet, carrot, kohlrabi,



Hotbeds and coldframes are useful in proportion to the skill with which they are used. With conditions not of the best for growing crops it is essential to make use of selected varieties of proven adaptability to under-glass cultivation.

lettuce, radish, beans, cucumbers, tomatoes, cauliflower and muskmelons. It is significant that experts do not differ as to the most profitable strains for under-glass vegetable crops.

The first four are the easiest to grow. Beans, cucumbers and tomatoes require more space, heat and time. Cauliflower and muskmelons are luxuries. Getting special forcing strains for under glass is essential. Most seedsmen have their own selected strains of approved varieties, selected toward individual ideals and differing in minor degrees.

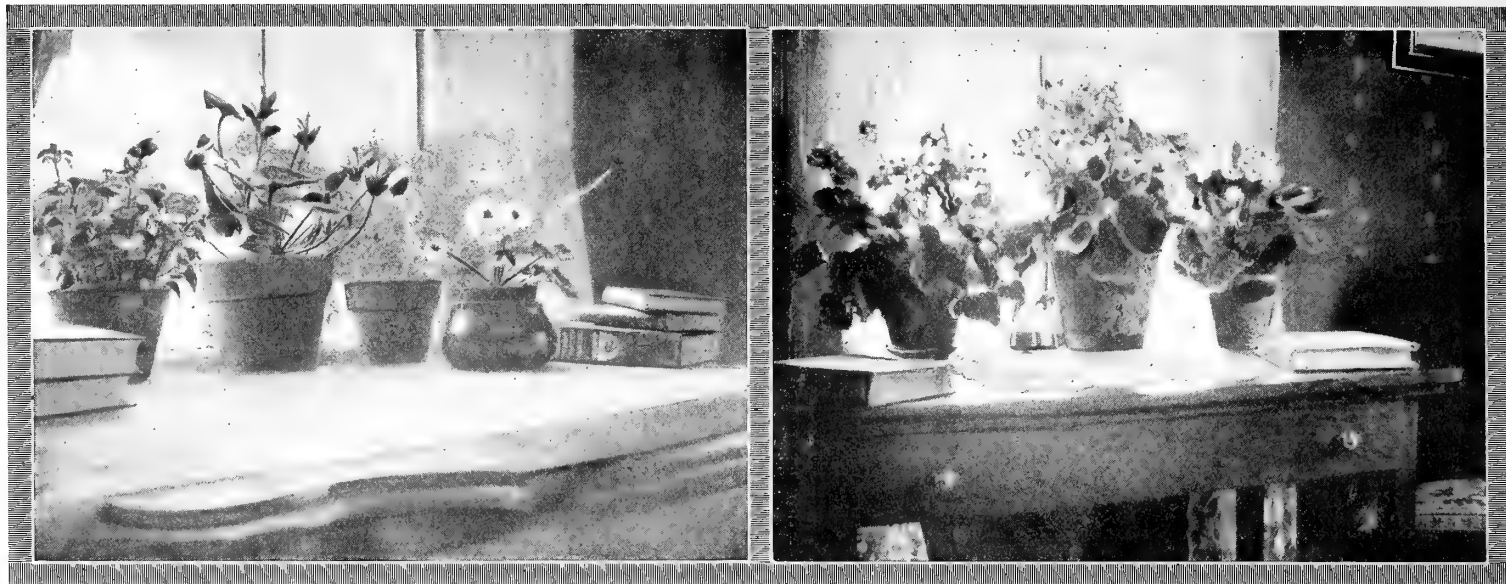
Beet: Crosby's Improved Egyptian. Carrots: French Forcing and Gold Ball, ready in forty-five to fifty-five days. Generally grown as a companion crop with radishes and sown in same furrows. Kohlrabi: Early White Vienna or Early Purple Vienna, two and a



half to three inch roots within fifty-five days from sowing. Lettuce: Grand Rapids (loose leaf), May King, Naumberger, Big Boston and Dreer's All Heart (butterhead). Radishes: Small, short-leaved radishes of the "cherry-stone" type may be gathered in from eighteen to twenty-five days, depending on variety. Among round red sorts are Rapid Red Fireball, and Cardinal Globe; White-tipped olive-shaped French Breakfast; and round white-tipped, Sparkler. Wood's Early Frame is the popular long red sort, and the Pearl Forcing Strain of White Icicle in the long white radishes. Early Wonder Beans: Triumph of Frames and Dwarf French Forcing. All do better after February 1st, when sunshine and daylight become stronger and longer. Of Cucumbers there are two distinct types: (1) The long English Telegraph type, requiring from 100

to 125 days to reach full size. A strong grower and where space permits, will yield a quality product beyond compare. (2) The short fruited White Spine type (including such kinds as Davis Perfect, Vickery Forcing and Arlington White Spine), yielding fifty to sixty-five days from date of sowing, according to conditions. Tomatoes: (Small-fruited) Sunrise, Comet and Stirling Castle, all light red; (large) Beauty and Magnus, purple-red. Commercial growers consider Livingston's Globe as the most profitable purple fruited sort of medium size for under glass cultivation.

The Dwarf Erfurt type of cauliflower, is well adapted for growing in hotbeds.



A little thoughtful care given to the holiday plants and they may be made permanent inhabitants of the window garden

After Blooming—What? ANNA M. BURKE

MAKING THE MOST OF THE HOLIDAY GIFT PLANTS.—HOW TO GET THE MOST VALUE OUT OF THEM

THE joy of the Christmas season takes on an added note if some one has remembered us with a pot bright with blossoms or gay with crimson berries. Wars may wage across seas, snows may whirl against our window, but at least within doors there is peace and warmth, and the cheer of "green things growing."

But alas, it too often happens that the plant which was cherished as a thing of beauty at Christmas time finds itself, a month or two afterward, consigned to the ash barrel because its flowers or berries have faded; whereas with a little care given at the right time it might be made to bloom and give pleasure for many years.

Most of these plants have been grown under ideal conditions, and the change from the moist coolness of a greenhouse to our overheated and underventilated living rooms is very marked. Much can be done to temper the shock of this change by keeping the plants, for a part of the day at least, in a room where the temperature does not go much above sixty degrees, changing the air in the room occasionally, and by frequent spraying of the leaves keeping them free from dust.

The Poinsettia

RED is the dominant note among Christmas flowers, and no plant bears this color more bravely than the Poinsettia—that brilliant flower of Mexico, which so obligingly unfolds its crimson bracts in the dead of our Northern winter. It is a most decorative plant, whose beauty may be much enhanced by placing it against a background of delicate Ferns. Keep away from the direct rays of the sun, and give frequent sprayings to prevent the tiny red spider from taking up his abode beneath the leaves. When the bracts fade, set the pot in a dry cellar, where it will require no water or attention until spring. About the middle of May, plant the roots outside in a sunny spot, or if no yard space is available, leave the roots in the original

pot and bring it into a sunny window and water well. Tiny shoots will soon appear, which should be broken off when about two inches long and potted in sand. When rooted, four or five of the little plants may be set in an 8-inch pan, filled with good garden soil mixed with leaf mold and a little bone meal. During the summer they may be kept out of doors, or in a sunny window, as preferred, keeping the pots well watered and giving liquid fertilizer every two weeks. (A teaspoon of nitrate of soda dissolved in a quart of lukewarm water makes a clean fertilizer, or half a teaspoon of bone meal may be stirred

into the soil, where it will slowly dissolve and feed the roots). If kept out of doors, the Poinsettias should be brought in about the first of September and kept in a warm, sunny window until the brightly colored bracts appear.

Ardisia

HIGHLY prized for the profusion of its bright crimson berries the Ardisia is one of the most popular Christmas plants. Its leaves are a dark, glossy green, and so beautiful that it would be a desirable plant for its foliage alone. The clusters of berries often last for two years, if the plant is kept well watered, with frequent sprayings. In the spring it should be set in an east window, to induce new flowers. When these appear, give liquid fertilizer once a fortnight. During the summer it may be kept in the living room, or in a corner of the veranda sheltered from winds, bringing it into the house before there is the slightest danger of frost.

Jerusalem Cherry

ANOTHER popular fruit bearing plant is the Jerusalem Cherry, very symmetrical and so laden with berries that it would be hard to find a more attractive table or window ornament. The "cherries" will last for three months, but if a trace of coal gas is present in the room the green leaves will quickly drop off.

Frequent sprayings will help to keep it in a healthy condition. In the spring, the old plant may be cut back and then plunged in a partly shaded spot out of doors, giving plenty of water during the summer. Keep the tips pinched back to make the plant bushy, and turn the pot frequently to avoid a one-sided growth. Before bringing into the house a little bone meal should be stirred into the soil. The Jerusalem Cherry is easily grown from seed. Crush one or two of the berries, separating the seeds from the pulp, and sow in February in a box of fine soil. Transplant into pots and treat during the summer as in the case of the old plants.



Of all the Christmas plants the Poinsettia seems to be most seasonable. It needs drying off before new growth is started in the spring

Ornamental Peppers

AS THE holiday season approaches, one frequently sees in the florists' windows pots of gay little peppers—the tiny fruits in all stages of development, ranging in color from green through cream and yellow to brightest red. They are most attractive and are a practical gift besides, as the pods may be picked to add piquancy to a sauce or salad. If kept well watered and sprinkled, the pods will last until February, after which they may be given the same treatment as the Jerusalem Cherry.

Azalea

IT REQUIRES no little will power to resist the lure of the flower shop in Azalea time. Such gorgeous colorings and such a wealth of bloom! Although fairly expensive to buy when in full bloom, an Azalea is really a good investment, because with a little care it will live and blossom for many years, increasing in size and beauty each winter, and will add a note of color to living-room or conservatory that no other plant gives. When the blooming season is over, do not thrust the plant into the cellar or into some obscure corner. That is the Azalea's annual growing period and it must be encouraged to make a good growth in order to store up strength for next season's bloom. It is well to repot the plant then, using if possible a soil composed of sand and leaf mold mixed with good garden soil. Keep it in a cool, sunny room, and spray often with lukewarm water. Pick off all dead flowers and prune back any uneven growth. The Azalea is easily injured by too much or too little water; the soil should always be moist, never dry nor water-soaked. As soon as danger of frost is over, sink the pot in the ground in a cool, partly shaded spot in the garden, placing a layer of coal ashes in the bottom of the hole before setting the pot therein. Keep it well watered and sprayed during the summer, turning the pot occasionally to keep the growth symmetrical. A few applications of fertilizer will increase the



Ornamental Pepper or Capsicum is handled just like the old favorite Jerusalem Cherry. They come with fruits in several colors. Seeds from the berries may be sown in February

growth. Before frost remove the plant to the house and keep in a cool, well lighted room. When ready to force bring into a sunny window, spraying daily. As soon as the flower buds are well formed, remove from the direct rays of the sun.

Winter Begonia

ANOTHER lovely gift flower is any Begonia of the Gloire de Lorraine type. So profuse is the bloom that the foliage is almost hidden and each plant seems a great bouquet of soft pink flowers. If kept cool and well sprayed, the blossoms will last until April. The plant will then require a season of rest, during which it should be kept in a cool, well lighted room, giving only enough water to prevent the plant from drying. About the first of June it should be repotted, using a soil composed of leaf mold, sand and loam, with a

sprinkling of bone meal. During the summer keep in a shaded position. After hot weather is past, a vigorous new growth should appear, and the plant can be gradually brought into full sunshine, keeping it as near the glass as possible to develop flower buds. Occasional doses of liquid fertilizer or bone meal should be given.

Cyclamen

THE dainty Cyclamen will usually live and blossom for several years, although the flowers will not be so large as on new bulbs. The blooming season of the Cyclamen is usually over about the first of May. When no more flower buds appear water should be gradually withheld and the bulb allowed to ripen. About the middle of May plunge the pot outside in a shady, well-drained spot, watering occasionally. As soon as new leaves appear repot the plant, using equal parts of sand, leaf mold and loam, with a little bone meal. Do not bury the bulb; simply press it into the soil. The Cyclamen does not need strong sunshine and thrives best in a fairly cool room. It relishes a daily spraying with lukewarm water to discourage the red spider, which is its only enemy.

Various Bulbs

EACH year one sees more and more bulbs forced into bloom for Christmas. Pans of graceful Roman Hyacinths, baskets of Daffodils tied with gay ribbons and pots of early Tulips are displayed in the florist's window to lure the passer-by into buying one of the loveliest gifts of the season. Equally as fascinating as these pots of bloom are the boxes containing a little bowl of pottery or brass, some fat brown bulbs and a supply of white pebbles. All that is needed is to place the bulbs in the bowl, surrounding them with the pebbles to keep them upright, fill with cool, fresh water, place in a sunny window—and watch the mystery unfold. As soon as the flowers appear remove to a cool corner of the room. "Can I force them again?" is the



The Indian Azalea is a good investment, increasing in size and beauty each year. It must be kept growing after flowering and not dried off



The Cyclamen will bloom year after year. Gradually dry off after blooming to ripen the bulb. Plunge outdoors in early summer and encourage to grow

question so often heard from those who are loath to part with such delightful new acquaintances. These Dutch bulbs—Narcissus, Tulip and Hyacinth, cannot be forced a second season with any success. A few inferior blossoms may be had, but when new bulbs may be bought so cheaply, it is not worth while to depend upon old bulbs for winter bloom. They need not be thrown away, however. Keep the pots watered until the foliage turns yellow, when they may be removed to the cellar. In the spring they may be planted in the hardy border and after a season of rest they will bloom for several years.

Primrose

THE Primrose (*Primula obconica*) is also quite willing to blossom for several seasons with a treatment very similar to that given the Cyclamen, except that the Primrose must be watered regularly throughout the summer. If the old plant is large, the crown may be

divided, putting each individual plant into a small pot. They should be kept growing throughout the summer, transplanting to larger pots as they grow. Repot in the fall, using a rich soil, made loose with sand and leaf mold, and keep in a cool room. A north or northeast window suits the Primrose very well.

Beautiful Leaves

JUST now the florists are offering some beautiful foliage plants, whose variegated leaves are quite as attractive as flowers or berries. They are very practical gifts, because they look well at all seasons of the year, so that they may be used to decorate the hall or living-room in winter and the porch during the summer. They are also less sensitive to variations in room temperature and lack of sunlight, often thriving where a blooming plant would sulk or die.

One of the best for table decoration is the *Dracaena*. The red-leaved *D. terminalis* is

very showy and when planted in the centre of a pan, surrounded with Spider Ferns (*Pteris cretica*) the effect is excellent.

A stronger growing, shrub-like plant is the *Aucuba*, often called the Gold-dust Plant because its glossy leaves are green thickly spotted with yellow. It is excellent for hall or veranda. To bring out the beauty of its foliage it should be sprayed or sponged frequently. With a little care it will look well for many years.

While these foliage plants and Ferns have no dormant season, they appreciate a period of rest, signifying the fact by ceasing to throw out new leaves or fronds. The water supply should then be cut down, giving just enough to keep the plant in a healthy condition. Frequent sprayings should never be omitted. When new growth starts again, increase the amount of water and stimulate fortnightly with liquid fertilizer, or a small amount of bone meal may be stirred into the soil of each pot.

Is Drug Plant Growing Practical?

L. WAYNE ARNY

Extension Director, Mass. Agricultural College

[EDITOR'S NOTE: Many letters of inquiry about the possibilities of drug plant growing have been received during recent months. This article presents the facts as they are, looking at the question in a broad, open manner. Too many people are impulsively anxious to rush in (to almost certain failure and financial loss) where careful people with business acumen will hesitate. That drug plants can be grown is of course a truism; but whether they can be grown profitably is a different question, especially as the same plant under the same management in two different sites may give two different results in the yield of the essential principle, and no one knows why.]

DON'T attempt drug plant growing as a serious undertaking without weighing all the factors. During the last two or three years ill founded attempts at the growing and collecting of medicinal plants have led to a great many garden tragedies.

Before the great war very little thought was given to drug plants except in those sections where there was an established industry such as the peppermint industry in Michigan and other of the middle western states; and no one would have seriously thought of establishing a "farm" on which to grow belladonna and other of the more common medicinal plants. But the war soon stopped the importation of most of these plants which are so greatly needed in this country, and we were faced with a very serious shortage of crude drugs. Naturally, the obvious course of procedure was to endeavor to make good this shortage by home production, and this was actually done in many places. But certain peculiar problems soon presented themselves with the result that the enthusiastic embryonic drug growers began to realize that something more than the desire was necessary to fill the demand for crude drugs of high quality.

There is not the least doubt but that never will the time be more opportune for establishing an American crude drug industry; and such an industry is sorely needed, regardless of European conditions. But it must be well realized that the accomplishment of this depends upon a thorough knowledge of certain peculiar conditions both here and abroad and that such an industry must be built not only with the thought of supplying the needs of the moment but also with a determination of putting it on a very sound basis so that it will be able to thrive even after the present war conditions no longer obtain. There are several reasons for the desirability

of this. Even before the war started, the European importations of crude drugs were not wholly satisfactory. Much that came to our shores showed attempts at adulteration, or the substitution of spurious leaves for official ones.

Conditions Here and Abroad

AS SOON however, as we attempt to compete with European drugs we are faced with the difference in labor conditions, and the manner of overcoming the existing difference in the labor status is the crux of the whole situation and upon its success depends any effort that may be made at establishing an industry in America.

There are only two means at hand which will enable the American grower to accomplish his purpose: producing more drugs per acre, or producing better drugs which will command higher prices in our markets. Unless he can do either one of these two things he is doomed in his business. The first alternative is almost hopeless, since the European gardener is so much advanced in experience and already has methods which our growers have not. But there is great hope in the possibility of our growing better drugs than are produced abroad, and it is with this thought in mind that the prospective drug grower should begin his endeavors.

Let it be here stated in no uncertain terms that the man whose ambitions are solely to grow drug plants regardless of their alkaloidal content or their relative merit compared with those produced somewhere else will never succeed and his efforts are to be classed with get-rich-quick schemes of which we already have far too many. For the man who is earnestly endeavoring to grow crude drugs of exceptional quality there is a very bright future.

Let it also be said that there is no place for the enthusiastic economist who has the idea

of collecting weeds with the double aim of converting them into money and at the same time ridding his property of noxious plants. The markets are well stocked with such drugs and the men who are collecting them are mostly foreign laborers who are content with one dollar per day as a return for their work.

The seriously minded drug grower needs a good greenhouse or at least an ample supply of hot beds and cold frames. The greenhouse is very much preferable since most of the more valuable crops must be started under glass about January, and their success is more nearly assured in a good house. He must also have had experience in handling special crops. Drug plants are not like anything he has ever grown before, and it is for this reason mainly that the average farmer is so wholly unsuited for the work. The market gardener or the floriculturist is very much better equipped for the special demands that will be made upon his resources. And lastly, but not least, he must have a fair capital, a good deal of which he is prepared to lose or to charge to experience or the pleasure which he has derived from his researches. In other words, the average of ten years of drug growing will probably not show any material increase in financial return over the production of the same acreage of any other special crop such as market garden produce, flowers or nursery stock.

Drug Crops in Demand

THE crops which are at this time in greatest demand are: belladonna (*Atropa belladonna*), Hydrastis (*Hydrastis canadensis*), digitalis (*Digitalis purpurea*), Hyoscyamus (*Hyoscyamus niger*), aconite (*Aconitum Napellus*), cannabis (*Cannabis americana*). There are many others which are bringing a fair price but they are mostly easy enough of culture so that little difficulty would be experienced in their production.

Of the above list, *Hydrastis* is one of the most interesting. It is native to the American woods, is not found in Europe, and hence is not influenced by foreign competition. Not many years ago this plant was in such quantities in a native state that its price in the crude form rarely went above thirty cents per pound. But the plant has been collected with utter disregard to any laws of conservation until there is now an actual scarcity of it and the normal price is somewhere about four dollars per pound. The war price has gone considerably above this figure.

Hydrastis. In the commercial production of *Hydrastis* the effort is usually made to imitate the natural conditions of growth as closely as possible, and many acres of it have been planted in woodlots, and allowed to go as it would for a period of years. This method is to be condemned, for while it is cheap it is very difficult to obtain satisfactory roots under such conditions, and there is usually more time taken to mature a crop than when grown under the artificial conditions of a ginseng house.

Such a house is constructed of lath in a manner which will give approximately 75 per cent. shade. The beds are regularly laid out as in a greenhouse and conditions are much more nearly under control than in the woods. Furthermore, marketable roots may be produced in four years as against five or six in the woods. The plant is usually propagated by root cuttings or by buying two-year old plants from some dealer who is making a specialty of *hydrastis* and is set in the beds made of exceedingly rich wood mold. Little work is then necessary except to keep the beds clear of weeds until harvest time which is determined by the size of the roots. Commercial roots should be at least one half inch in diameter. They are dug in the fall or in early spring when the plant is dormant, cleaned, and cut in lengths of about eight inches and packed in bundles of a hundred or more. There is some evidence that diseases are attacking *hydrastis* in much the same manner as ginseng was attacked and every *hydrastis* grower should be well on the lookout for the first signs of such trouble and destroy any plant that looks suspicious. At the present time there is not enough known about these fungous troubles to give directions for their treatment.

Belladonna. This is next in importance, the normal price being about thirty cents per pound and the war price between one and two dollars. *Belladonna* is a very difficult crop to grow chiefly because not enough is known about its horticultural requirements, and propagation material is very difficult to obtain. There have recently been sales of *belladonna* seed at which prices of \$80 per pound have been paid. While the common name of this plant is "deadly nightshade" it must be well understood that it is not *Solanum dulcamara* which is known as "deadly nightshade" in some sections of the country but *Atropa belladonna*. *Belladonna* seed must be sown in the greenhouse about the first of January in flats containing a rich sandy soil mixture. It is very slow in germinating and only a comparatively few of the seeds will produce seedlings. A fifty per cent. germination is considered by some growers as being satisfactory, and many get less than that. Transplant the seedlings into pots as soon as they are large enough to move and keep in the house at a temperature

of about 60 and then move to the fields when the weather has settled in the spring and the ground is warm. It is very advisable to make the field transplanting on a cloudy day when the soil is moist, since the seedlings wilt quickly and are very difficult to handle after they have wilted. The crop must be cultivated as for corn and watched very carefully for blossom buds. As soon as these are ready to burst, start the first picking of leaves. Unless the crop is a large one, it pays to harvest by hand-picking the leaves into sacks which are at once moved to a drying shed. A barn may be used for this purpose provided it has good ventilation, and is very much improved if there are wire racks arranged so that the leaves may be suspended and receive air from all sides. It is also necessary to turn the picked leaves two or three times each day for the first two or three days to prevent molding or fermentation.

This drying operation is one in which the American growers have a great deal to learn. A well dried leaf will have such a high chlorophyll content that it will be almost as green after it is dried as it was in the fresh state. With the ordinary air drying methods which are used in this country it is practically impossible to obtain these results.

If the plants are well handled it is possible to get three crops the first year and four the second, and after the growing season of the second year the roots are dug in the fall and they are then dried and marketed much the same as *hydrastis* roots. In a great many localities it is very difficult to properly winter over the *belladonna* root even though they be heavily mulched with straw or other material. It is therefore profitable to take the root up in the fall and reset it in the spring if the area involved be small enough to permit of this operation.

Hyoscyamus is probably the most difficult drug crop that may be grown in the temperate regions, and for this very reason is one of the most satisfactory to produce from the standpoint of financial return. The seed is usually harder to germinate than that of *belladonna* and the germination is generally poorer. For best results, the soil in the seed flats may be slightly more sandy and the flats well shaded until the first seedlings appear. They are then handled in the same manner as *belladonna*. After the plants are set in the field the grower has a continual fight with a wide variety of insects. It is a common experience where there is *hyoscyamus* growing near a potato patch to see the potato beetles leave the potato plants and go to the *hyoscyamus*. The crop must therefore be sprayed once each week with arsenate of lead and the cultivation must be shallow enough not to disturb the roots in any manner. It is useless and a waste of time to sow the seed of either *hyoscyamus* or *belladonna* directly in the field. It is practically impossible to produce a crop in this manner although a great deal of good seed is annually wasted in such futile attempts.

Aconite is difficult to make germinate, but once that has been accomplished the seedlings are easy to handle and a good crop may be expected.

Digitalis (the Common Foxglove) is simple of culture although in many sections a great deal of trouble is experienced in wintering the roots. This is not the serious feature it once was, since the new Pharmacopoeia has made

official the leaves of the first year plant, and the crop is so easily grown that there is no objection to growing it as an annual, except when the seed is wanted.

Cannabis is perhaps less difficult than *digitalis*, and the same treatment as given to field corn will usually produce a good crop of *cannabis*. It must be remembered in this connection that the sex of the *cannabis* is distinct, the males having a very different appearance in the field as compared with the female. Only the female plant has any medicinal value. Some *cannabis* growers are now removing the males from the field as soon as fertilization has been accomplished thereby removing from the final product practically all of the waste material.

Plants that Yield Oils

MANY of the volatile oil plants and the old garden herbs are subjects of interest and if the grower has had experience in handling them, they may be made profitable. Sage, calendula, horehound, coriander, pennyroyal, wormwood, tansy, rue, etc., etc., all give promise of again coming into prominence, although in some cases the profit would necessarily come from the distilled oils which would involve the use of a still in the garden. This is not an operation which would make the growing of these interesting plants prohibitive.

Marketing a Real Problem

IT IS more difficult to market a drug crop successfully than it is to grow it. The most usually successful way of disposing of a well cured crop is to send a small sample to each of four or five commercial houses which are regular buyers of the particular drug in question. The novice will be surprised at the wide range in the offers which he will receive, some being discouragingly low, and none as high as the grower had hoped. The price paid for these crops is based on the amount of *active principle* present.

There is not enough known of this subject to enable any one to state what brings about high or low yields; but it is very definitely known, that certain fields will yield a high atropine content in *belladonna* for example, while other fields nearby will produce plants so low in atropine that their harvest will bring no profit. The new grower therefore will plant only a small crop the first year so that he may have some idea of what to expect from his particular conditions.

The Outlook

GROWING medicinal plants must be done in such a manner as to insure a continual supply of crude drugs of high quality. There never was as opportune a time for such work as at the present, since the greatest importations of crude drugs have come in years past from England, France, Belgium, and Germany. There will therefore be a period even after the war has stopped when little if any crude drugs will be imported.

The business of growing drugs is not one which would appeal to the farmer, the amateur gardener or the corner druggist with a back yard, but rather is one which gives promise to the man who regards it as a business, and who is fitted by reason of capital and previous training to follow it through to success.



1. Dig up the Dahlias and put them on one side for an hour or two to dry off



2. Then chop off the stalks, leaving about six inches. A machete is handy for this



3. Attach the label carefully. This is important. A wire label is convenient

Dahlia Tubers

THIS is for amateurs and is the result of our experience for the past five years during which we have grown more than five hundred plants of some two hundred varieties each year. Tubers have been kept in boxes packed in *dry* sand, in boxes packed in ground cork, in piles covered with papers, in piles on a platform raised three inches from the cellar floor with papers under and over the pile and sand thrown over the papers, and in boxes lined and covered with papers but with no packing material.

The successful keeping of the tubers begins with the digging. This should be done on the first fair day after three days from the killing frost and should not be delayed more than a week, especially if the weather is warm. This gives time for whatever strength may recede from the stalk and not enough time for the tubers to sprout.

A notebook should be kept in which are minuted the peculiarities of each variety. If the tubers set compactly with strong necks like Doazon, John Wanamaker, J. H. Jackson, they may be dug with a spading fork set well underneath and then lifted up. If the tubers are heavy, with small necks and long feeding roots from ends of tuber, like Yvonne Cayeux, Iris, Century, Philadelphia, the earth should be carefully removed, the tubers uncovered, and the feeding roots cut off, and it will often be better to divide the clump before it is lifted out. A few light blows on the end of the stalk, which should be cut close to the ground before the digging, will make the earth drop from the tubers. Then allow them to dry until the moisture is out of the earth that will still cling, but take care that the tuber does not shrivel and that the skin does not wrinkle.

Very soon after being dug, cut off the stalk within an inch or two of the crown and trim off the feeding roots and all tubers with broken necks. This will hasten the drying, leave the dirt in the garden and, besides, the tubers will pack closer and keep better.

The best thing in which to pack them is boxes at least a foot deep, fifteen to twenty inches wide and two feet or more long. If sand is used the box should be lined with papers to prevent the sand from sifting out through any cracks. Be sure that the sand is very dry and that no moisture is on the tubers. Bore two holes in the bottom of the box and plug and set the box so that another box may



4. The Dahlia roots may be stored in boxes with dry sand



5. Ease up the soil around the Gladiolus and then pull up and—(See No. 11)



6. Lift the Geraniums and pack away in sand, to be moistened occasionally during the winter—



7. Or, Geraniums may be lifted and tied in bundles with moss around the roots; then hung up in the cellar

be put under to catch the sand when emptying the box to examine tubers. Ground cork, that can be had at the fruit store, is just as good as sand and much lighter so that the boxes can be easily moved.

Some kinds, like Maud Adams, General Miles, La Colosse and its children, should be put in neither sand nor cork. We have found that there is less loss from drying up when no packing material is used than there is from

decay when sand or cork is used. If your notebook tells you that certain kinds are apt to dry out, pack those in sand or cork. For the others, line the boxes with ten or twelve thicknesses of newspapers, bottom, sides and ends, laid smoothly, with papers projecting to fold over top when box is filled. Then lay in the tubers, top side down. There are two good reasons for this—the acrid juice will settle away from the crowns and they will pack



8. Use a spade to dig out the Cannas, leaving them exposed to dry off slightly



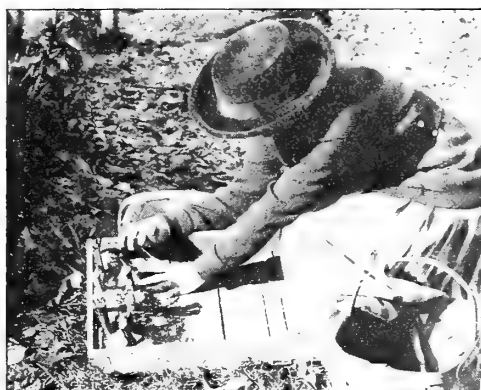
9. Then trim off the tops and take the roots indoors



10. Store roots in flats packed with sand; then place in a cool cellar till spring



11. —trim off the top before finally cleaning up the roots for winter storage



12. Keep each variety separated and store away with names attached



13. Several varieties in one box, separating them by strips of wood



14. Tuberose are handled like the other tender roots—lifted, trimmed and stored in pans of sand

closer, equally important. Then fold the papers over the top, first having laid a few thicknesses on the tubers, and lay something on top of the papers to hold them close, but not too heavy.

If tubers are bruised in digging, cut away to make smooth and then dust with powdered sulphur. Varieties that are apt to decay at the crown should have the crown and stalk thoroughly sprinkled with sulphur. The power of sulphur to prevent decay and to arrest

it if it has begun, is remarkable. One spring we planted a Suzanne Cayeux; in the fall it had more than doubled in size, and the next spring it was firm and good except that it had begun to decay. We cut out the decayed part, dusted it well with sulphur and planted it again. It grew well, and when we again dug it, it was as firm and sound as when planted, the sulphur having prevented further decay.

When the tubers are packed by themselves

it is easy to look them over, just moving from one box to another. This inspection should be done after a month or so, say between December 1st and 15th. If any are beginning to decay, carefully cut the decayed part away and dust with sulphur; if any stalks or crowns show moisture, sprinkle with lime dust and sulphur, and return to the box. The boxes should be kept away from furnace heat, preferably in a room in one corner of the cellar where the temperature will not be above 50° or go below 38°, with the window darkened. Ours are kept in a corner room with brick walls, cement floor, and with a loss of one per cent. against a loss of from ten to twenty-five per cent. when kept in sand, cork or in piles. Some kinds will dry up, these may be put in a box with a moist sponge or wet papers, but not so that they will touch, and this may save them. But there are varieties enough that are good enough so that an amateur may well discard the kinds that are difficult to keep over winter. After all, one's own experience is the best teacher, but ours may be helpful.

Massachusetts.

E. V. WILSON.

Gladiolus Bulbs

AFTER the tops have matured it is a simple matter to merely dig up the attached bulb as shown in the illustrations 5, 11, and 12. The top need not be cut off immediately; indeed it is usually better to gather the bulb with the attached leaves and proceed to the cutting off in a conveniently sheltered place later on. But in order to avoid handling too much material they can be shortened considerably as they are gathered in the garden. Gladiolus bulbs are kept over the winter in just exactly the same way as other bulbs, with the one precaution that they must not freeze. After slightly drying off they must be cleaned up, the new flowering bulb separated from the remnants of the old one which has rendered its service and at the same time separating the mass of smaller cormels which are produced more or less, according to the characteristic of the variety. These small cormels may be stored into size, the larger ones of which will soon develop into flowering vigor. The smaller ones can be sown out next year in nursery rows, to be grown on and treated like the older bulbs.

Aphids on Your Plum Tree?

EDITH M. PATCH

Entomologist Maine Experiment Station

[EDITOR'S NOTE: This story identifying the plum aphid with the one on aquatic plants in summer is too interesting to be buried from the general reader in a scientific bulletin where the author put it a year or so ago, after tracing the wonderful life history of the insect concerned. So the marvel of it is rewritten in words that are not technical because of its practical interest to the gardener.]

WELL, spray promptly, of course. Use kerosene emulsion if you know how to make it so it will not injure the foliage. If not, try some good tobacco extract and apply freely—don't miss one of the pests! Kill 'em quickly—the whole messy sticky colony that the ants are ambling among! If you don't, your plums are doomed (Unless, of course, the syrphid maggots, lady beetles and aphid lions undertake the job for you and save you the expense of the spraying equipment).

"What are aphids for any way?" "Why to keep the horticulturist from becoming lazy,

since 1761. This is not so strange as it may seem and is the same thing that has happened to many of Linnaeus' species since it is not always easy to tell from his descriptions just what insect he had in mind.

To be sure all insects are remarkable in one way or another, but listen to what the man from Ohio found out about this one.

"One peculiarity which attracted my attention was the ease with which the aphids walked over the surface of the water, or were found half submerged in an attempt to feed on aquatic plants. An accurate examination of the forms showed that on either side of the thorax were located three pairs of wax glands.

It is quite clear that this waxy secretion would be of the greatest value in keeping the insect from getting wet, as it not only projects out from the body, but is also powdered over the entire ventral portion of the thorax. While walking on the water this secretion is always in contact with the surface and serves as a float while the insect pushes itself along, moving quite as rapidly as on a dry surface."

A few years previously an account of the same insect appeared in *Science* under the title, "A Lacustrine Aphid."

In 1910 another entomologist found out that Linne' and the man from Ohio had been dealing with the same species and that its name, if written in full, should be *Rhopalosiphum (Aphis) nymphaeae* (Linne') (*aquaticus* Jackson) Davis.

BUT what has all this to do with the aphid on your plum tree? Nothing so far as any one knew until 1915, when an aphid detective in the backwoods of Maine fell to puzzling over the species attacking plum in that state. All except one answered to names associated with *Prunus*, but this one had never been named apparently. That little oversight was easily corrected—down went a name in manuscript. What it was does not matter now for it never got into print. Just before the paper went to press a publication arrived from Russia containing the description of a "new species" on *Prunus*—*Aphis prunorum* it was called. It looked, judging from its picture, remarkably like the unnamed plum aphid in Maine.

But what business had either the Maine species or *prunorum* from Russia in the genus *Aphis*? The swollen cornicles brought it nearer *Rhopalosiphum* didn't they?

Perhaps that clue didn't make the aphid detective jump! Why? Well, because there was a common species knocking around on water plants o' summers ever since the time of Linnaeus. It was a migratory species, too, in all probability; for how was it to winter on a succulent water plant? And didn't that species have swollen cornicles and an antenna like the "new species" on plum?

Out came the microscope, and the *aphis* from the plum and the *aphis* from the water plant could not be told apart on their structural characters!

Supposing, O, just supposing it should turn out that *Rhopalosiphum nymphaeae* (Linne') migrates to plum in the fall and deposits her overwintering eggs on its twigs and that the species lives on the plum in the spring until it is for it to go to the waterside for the summer months!

Now it is a difficult matter to follow an

aphid in its flight and find out where it goes when it leaves something else. But there is one time in the life of a migratory aphid when it can often be made to confess its own secret.

Potted water plants were brought to the laboratory early in the season, before the aphids were winged on the plum; and was it coincidence that at this time there were no aphids on the Arrowhead? Wait! On June 17 there were plenty of migrants taking flight from the plum. A few of these were captured, just as they were about to leave, and placed on the potted Arrowhead. And the nice little creatures folded their wings and dipped their beaks into the stem of the Arrowhead!

And five days later that same plant (shown in the accompanying photograph) was crowded with their progeny, many of them already half grown. If one of them dropped into water it paddled off unconcernedly for the food plant again. They were waxed without and the water did not penetrate. They were, indeed, no other than the "semi-aquatic"—the "lacustrine" aphid.

SO THE daughters and the granddaughters and the great granddaughters of the aphids that migrated from your plum tree last spring, dwelt on cool water plants for the summer, taking a swim now and then if they happen to drop. And then in the fall a generation with wings appeared and they returned to the plum where the overwintering eggs were left to provide for the messy sticky colony on your plum this spring.

While you are applying kerosene emulsion or tobacco spray, it may perhaps occur to you that Linnaeus would have been much interested if he had known what you do about that little Pond-lily aphid which hid its secret from mankind for more than one hundred and fifty years.



Where does the "black fly" of your plum tree come from each year? Ever notice lice on Water-lilies?

to furnish the entomologist with a salary, and for the naturalist to tell you a story about."

Yes, aphids have stories—and this is the tale that belongs with one of the plum feeding species.

More than a century and a half ago Linne' (or as he is more usually called Linnaeus) found an aphid on a Pond-lily and called it *Aphis nymphaeae* after the plant it was living on, an old and very good way of naming these insects, for many of them stick remarkably close to a single species of plant or a few nearly related ones. This kind, however, accepts on its bill-of-fare several water plants and not infrequently thrives in the aquarium.

It was in such a situation that a man, about ten years ago in Ohio, found a colony of these aphids and called them *Aphis aquaticus*, never suspecting that they had had a name ever



Arrowheads and other aquatic plants are often infested like this by plant lice that migrate to the plum in winter

At the Turn of Winter W. C. McCOLLOM

AS THE DAYS LENGTHEN ACTIVITIES IN THE GREENHOUSE BEGIN FOR THE NEW YEAR

FORWARD looking gardeners are glad when the end of December approaches for to them it means gradually lengthening days with increasing light, and in consequence an awakening of activity in plants under glass, and easing up of the actual management of routine operations in keeping plants growing. With diminished light and increased heat the problem of keeping the plant healthy is not always an easy one to solve; but as the end of December approaches the necessity for very close attention greatly diminishes. The difficulties of winter management of the greenhouse are wrapped up in those two facts, and it is a mistake to endeavor to force growth unduly during periods of dull light. The tendency is always to get the house too warm, which is bad in ultimate results. The best grower in the world cannot make a good plant ultimately out of one that in its youngest stages has been forced into a sappy, long drawn out, weak growth by too high a temperature in the absence of adequate light. For instance, if you are growing Sweet Peas too much heat at this time makes them soft and consequently an easy prey to mildew or aphid; and although there may be more flowers produced to the plant, the individuals will be small. Fifty degrees at night is the maximum temperature for this time of year; but when more ventilation can be given with less fire heat, a higher degree can be maintained.

Getting Flowers Early

PRACTICALLY all annuals make fine subjects for early spring forcing; that is, by sowing now you will have flowers in abundance during March, April and May or until the outside flowers appear. This will also add considerably to the variety of flowers in your greenhouse and while most of these plants will not force well during late fall and early winter, they will do well from this time on. Lavatera, Scabiosa, Stock, Candytuft, Zinnia, Clarkia, Arctotis, African Daisy, Sweet Sultan, Marigold, Cornflower, Calliopsis, Nicotiana, Calendula, Balsam are all available besides many others.

Antirrhinums are now recognized as one of our finest winter cut flowers. They force much better after the short days are passed, and are very easy to grow, if you do not try to hurry them with heat. Fifty degrees is ideal, and 90 per cent. of all trouble with Antirrhinum is caused by growing the plants too warm. The cultural requirement is to spray the plants frequently, feeding them freely when they start to flower and keeping them disbudded. The flowers keep well, have excellent stems, and have a fine range of colors. Mignonette is one of the rankest feeders of all forcing plants so feed it freely with liquid manures or mulch the bed with pure cow manure. Keep the strong shoots staked up and sprayed frequently to keep green fly in check.

Using Liquid Fertilizer

POT plants of Cyclamen, Primula, etc., can be fed freely with liquid manures when they start to flower. Begin easily and keep increasing both the strength and the frequency of the doses.

A word as to liquid feeding: Plants, like everything else that lives, like a little variety of diet. Make a practice of giving "balanced rations" so to speak. Sheep manure, cow



By a little tempering of the winter's cold many of the spring flowers can be had in late winter. Cut branches of flowering shrubs are easily brought into bloom indoors

manure, or good stable manure, all good fertilizers, are equally effective when used in liquid form; so also guano and any of the concentrated natural plant foods, and the chemical foods such as nitrate of soda, sulphate of ammonia, potash, can be used in liquid form. The general practice is to dissolve about a bushel of the natural manures in a barrel of water, letting it stand for a day or two. If you tie the manure in a loose sack, it will not clog up the spout of the watering can. The stronger forms such as guano or the standard concentrated foods should be used by dissolving an 8 to 12 inch potful in a barrel of water. A 5 or 6 inch potful of a barrel of water is double strength for the chemicals and should be diluted with an equal quantity of water before applying. These chemical plant foods should not be applied with the regularity that liquid manures are used but as occasional tonics to give the plants a good shake-up and accelerate root action.

Pushing on Early Flowering Shrubs

LATE in the month it is time to start cutting shoots from the early flowering shrubs (Pussy Willow, Forsythia, Japan Quince, etc.), for forcing in the greenhouse. Plunge the shoots into deep jars of water and keep the tops sprayed. Do not cut great quantities at one time, but rather a little frequently as the plants are improving every day because of the rest they are receiving. And they force much quicker and with better results later in the winter. But growing plants may be used too. Hard wooded forcing plants such as Lilac, Deutzia, Wistaria, are started by being placed in a cool greenhouse and the tops well sprayed until they show by the buds that root action has started, when they can be given more heat. Plants of this

type, if pot-grown, should be fed freely with liquid manures just as soon as growth starts. Hybrid Perpetual Roses for forcing in pots should be potted up just as soon as they are received. Use good rich soil and be sure the pots are properly drained. When potting ram the soil well with a potting stick. Roses dislike a wet, soggy soil that does not drain well; but in fact, nearly all plants do. The plants can be plunged in a cold-frame until they have been properly rested or they can be plunged out of doors and protected slightly.

Get Ahead on the Food Crop Supply

IT IS now time to think of next year in the vegetable garden. French globe artichoke sown now and carried along in pots in a cool greenhouse will surely fruit next season. Onions—those great, large mild ones—for salads, that are really more fruit than vegetable, are best sown now, and the seedlings can be "dibbled off" into boxes when large enough to handle and the boxes placed in a cool greenhouse until spring.

Sow lettuce, beans, cauliflower, radish, and spinach about every two or three weeks to keep a continuous supply on hand. Beets and carrots do not mature very quickly and if sown at intervals of five to six weeks you will have a proper succession. It is also advisable to sow a few pots of cucumbers occasionally to keep them on hand as the old plants sometimes "go off" very suddenly with stem rot.

Cucumbers and tomatoes growing in hills on the bench should have a top dressing, using the same compost as recommended for Carnations, but do not apply a lot at one time on the theory that if a little is good, a whole lot must be better. A little at a time, frequently, is the right idea. A good practice is to apply about an inch to the outside of the hills, when you see the white feeding roots showing through. Don't apply any to the top as covering the stems of the cucumbers is apt to lead to stem rot.

Carnations for Cut Bloom—Roses Too

FEEDING can be done now and it is a good practice to mulch Carnations under glass late this month; liquid feeding can be practised until such time as you are ready to apply the mulch. A mulch, however, is preferable to continual liquid feeding. Make a rich mixture, using well rotted manure and good turfy loam in equal quantities, and adding about one tenth the bulk of bone meal. Apply this mulch about one inch in depth, having the benches fairly dry at the time, first "roughing up" the top of the bench with a hand cultivator so the mulch will bind with the old soil; the bench should then be watered copiously. The same compost can also be used for Roses that are showing any indication of the lack of food. During dark, dull weather, Roses particularly and inside flowers in general, are very apt to be "off color." This is the direct result of lack of light. Feedings of soot occasionally will offset this. Dissolve an 8 inch potful in a barrel of water and apply it to the benches about once a week. Use it on all plants when the flowers are "bleaching out" which you will find more particularly with pink and red shades.

Organization in American Horticulture

WHAT THE VARIOUS SOCIETIES ARE TRYING TO DO, AS EXPRESSED BY THEMSELVES

[EDITOR'S NOTE: Much is being accomplished in a quiet way by the persistent effort of those devoted to particular flowers or interests to develop American horticulture along definite and cohesive lines. The benefit in each case accrues to people who garden in any form, but only a small minority of those who benefit actually support the organizations that are promoting their interests. This is partly due to the difficulty that the organization finds in getting in touch with those who might be interested. We have asked the representatives of the leading national organizations and special societies to interpret themselves to our readers. Letters concerning other organizations will appear in subsequent issues.]

The Premier of All Annuals

THE Sweet Pea occupies the premier position among annuals, in so much as it is the *only annual* which has a society devoted to it alone; and this unique position is deserved, for is it not one of the most valuable of all flowers? It is easily grown, surpasses as a cut flower, and by the use of glass may be had in bloom ten months out of the twelve.

The American Sweet Pea Society was founded in 1909, the exhibition and convention that year being held in the Museum of Natural History, New York City. The aim of the Society is to increase the popularity of its particular flower: *First*, by holding an annual exhibition whereat the most expert of our eastern growers usually exhibit, and at which the latest novelties can be seen. *Second*, by issuing from time to time bulletins containing advice and suggestions as to the best methods of cultivation, best varieties for various purposes, etc. The society conducts trials and variety tests at Cornell University, Ithaca, N. Y., under the direct supervision and control of Professor A. C. Beal, who also has written a number of comprehensive bulletins on the Sweet Pea, copies of which were distributed among our members. During the past nine seasons most successful exhibitions have been held in New York (three times), Philadelphia, Boston (three times), Newport, R. I., and Bar Harbor, Maine.

That the Society has been doing good work is noticeable by the ever increasing interest of the public at our exhibitions. The great advances made in the up-to-date methods of growing the Sweet Pea is evidenced in the competitive groups. The flowers staged now are immeasurably superior to any put up at our earlier exhibitions. Then again the exhibitor stages his flowers in a more artistic and attractive manner than formerly. The result of being in good company and trying to go "one better."

The officers of the society are at all times willing—nay, anxious to help the inexperienced, and invite the cooperation of all admirers of the "Queen of Annuals." The secretary is Wm. Gray, Bellevue Avenue, Newport, R. I.

GEO. W. KERR,
President.

Doylestown, Pa.

Putting the Rose on the Map

THE American Rose Society has since its organization stood for the orderly handling of Rose exhibitions in the United States, and for the registration of new Roses in a definite and simple fashion. Its influence in the direction of the greater shows of cut flowers has been notable, and the premiums offered and exhibitions held have emphasized the care and interest in this side of rose-growing.

Within the past three years, effort toward interesting and enlisting the amateur in the Rose army has borne fruit. The publication in succession of the 1916 and the 1917 *American Rose Annual*, the latter by impartial critics said to be a better volume than the famous *Annual* of the National Rose Society of England, has enlisted many interested Rose

growers all over the country in the Society's ranks. In fact, the increase has brought the membership of the organization close to 2,000.

The publication of the *American Rose Annual* has brought out many resources for Rose prosperity not previously available. For instance, the successive *Annuals* have discussed the hybridization of Roses so as to greatly increase interest in that fascinating and important art. Details concerning the wonderful new Rose species obtained in Western China by E. H. Wilson have been presented, and distinguished amateurs like Admiral Ward and Captain George C. Thomas, Jr., have given the results of their careful testing of new foreign introductions.

Not only has the investigation instituted through the publication of the *Annual* resulted in presenting more details as to the control of Rose insects and diseases, but as a result of the disclosure of the rather unfortunate situation as to lack of attention by any educational institution to Rose troubles there has been put to work a skilled plant pathologist, supported by public-spirited members of the American Rose Society, who is running down Rose troubles in a scientific fashion.

For the first time in the history of American rose-growing there has been prepared and published a carefully made list of Roses introduced in America from the earliest days of Rose hybridization. This list serves a most important purpose, and will be particularly in point in connection with the hope of the American Rose Society shortly to present to its members an authoritative catalogue of varieties current in American commerce, which catalogue would serve to classify, describe and accurately name the Rose subjects available.

The American Rose Society has started work to stimulate the holding of many June Rose shows in various parts of the United States, and it is believed that 1918 will see a great interest evidenced in shows in which the man with one good Rose opening on the morning of the show in his own back yard will have an equal chance for an award with the grower who works at greater expense and under more pretentious conditions. The thought is to actually popularize rose-growing.

One of the ideals of the Society is to bring the Rose into attention as a proper subject for shrubbery, through the description of the various original species and new sorts that are just as good as a Spirea, or a Deutzia, or a Mockorange, but have been overlooked.

It is believed that the American Rose Society has not only upheld the best traditions of rose-growing, but more recently has undertaken work which cannot but result in a vast increase of Rose prosperity in America. This increase cannot continue or the Rose situation improve as it ought to unless and until the interested amateurs the country over attach themselves to the Society. It was rather lamentable and remarkable to note recently in the beautiful *Journal* of the International Garden Club, published in New York, that free quotations were made from the English *Rose Annual*, and no knowledge evidenced that there was an American Rose Society or an *American Rose Annual*. Put-

ting it plainly, it is the work of the American Rose Society to get the Rose on the map in the United States!

The secretary is Prof. E. A. White, of Cornell University, Ithaca, New York, and he is always ready to accept memberships.

J. HORACE MACFARLAND,
Harrisburg, Pa. *Editor of the Annual.*

An Association of Women

A DOZEN women gardeners, farmers, and landscape architects met in Philadelphia early in 1914, to form an agricultural and horticultural association of and for women, an innovation inspired by the Woman's Farm and Garden Union of England. The objects of the Association were and are: Cooperation among women engaged in farming and gardening; exchange of ideas between members by means of local branches, exhibitions, conferences, and sale of produce by members on farms to those in towns; increase in the knowledge and use of existing institutions; encouragement of school gardening and vacant lot gardening; establishment of a standard for diplomas in practical gardening; the bringing together of supply and demand, producer and consumer, employer and employe, gardener and land, and individuals who might form a partnership.

Membership dues in the Association are one dollar a year; in local branches, two dollars, one of which goes to the Association, one to the Branch. In any case these fees include the subscription to the *Monthly Bulletin*.

We have now nearly two thousand members. We have held in the four years of our existence conferences in Philadelphia, New York, Boston, Washington, and Chicago. We have branches in Chicago, and Youngstown, Ohio; and New York and Boston are soon to organize.

This Association was begun by those who saw that teaching, stenography, book-keeping were not the only occupations open to women; in fact not always the best occupations for women. They hoped to make many see that an out-of-door occupation would be profitable in more ways than in money alone, though it would give a good living too.

We believe in farming and gardening for women. We believe in these as money-making occupations. We believe that the trained woman is the one who will most surely succeed in them; we therefore advise courses in farming and gardening for all who would undertake such work, these courses to be preceded if possible by some practical experience on the land that the nature of the work and one's adaptability to it may be fully realized. We publish a list of all institutions in the Middle Atlantic States where courses in farming, gardening, landscape-gardening, poultry-raising, bee-keeping, are to be had. We have helped women to positions on the land and provided many members with purchasers for their produce. We have now organized the Land Service League or Woman's Land Service. Under this Committee registration of women who want work on farms or in gardens or to care for poultry, and registra-

tion of those who have positions to offer is now being made. Bear in mind please the fact that this Association was begun before war was the programme of any but the Central Empires. Was it not "raised up" for just such an emergency as we now confront? Let me say here too that before the name of Hoover had re-echoed through this land, the watchword of the Woman's National Farm and Garden Association was "THRIFT and Beauty."

Beside our Woman's Land Service, we have a Committee on Markets and a stall of the Association has lately been opened in Jefferson Market, New York.

I should like space in which to give some idea of the variety of occupation of our members. All sorts and conditions of women belong to this widespread and democratic organization. From Mrs. Conrad of Indiana who raises the celebrated Poland China hogs with such success, to Mrs. Myrtle Shepherd Francis of Ventura, California, whose strain of Petunia seed is known the world over; from Miss Louise Shelton, whose books on flower-gardening are known to so many, to Mrs. Richardson of Iowa whose thousands of acres of alfalfa and whose other thousands of lambs are the envy of those who know them; from Miss Elizabeth White who grows in New Jersey the finest cranberries ever seen, to Dr. Effie Lobdell whose Georgia pecan nuts equal the cranberries, we have an endless variety of producers of food of all kinds, of fruit and of flowers. Also on our lists are numbers of landscape architects. And the value of all these women to the Association is that out of their own successes or failures they stand ready to help the inexperienced. It is an Association of women full of enthusiasm for out of door work, full of that friendliness for each other which is the accompaniment of all work in the open and full of a spirit of patriotism because it earnestly believes that women on the land can and will help our country to win this war. Miss Hilda Loines, 600 Lexington Avenue, New York, is the General Secretary of the Association; Mrs. B. W. Rosentone, 1653 Monadnock Block, Chicago, the Secretary of the Mid-West Branch.

LOUISE YEOMANS KING,

Alma, Mich.

President.

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in December

(following dates are meetings unless otherwise specified)

- Minnesota Garden Flower Society, Annual meeting with State Horticultural Society, by announcement.
3. New Bedford, Mass., Horticultural Society.
4. Lake Geneva, Wis., Gardeners' & Foremen's Association.
- Garden Club of Pleasantville, N. Y.
6. Marshfield, Mass., Garden Club.
7. Pasadena, Cal., Horticultural Society.
8. Dobbs Ferry, N. Y., Horticultural Society.
10. Park Garden Club, Flushing, L. I.
- Rochester, N. Y., Florist Association.
- New Rochelle, N. Y., Garden Club.
- New York Florists' Club, New York City, N. Y.
12. Lenox, Mass., Horticultural Society.
- Nassau Co., Horticultural Society, Glen Cove, L. I.
- Short Hills, N. J., Garden Club, Public Lecture.
14. Connecticut Horticultural Society, Wethersfield.
- Westchester, N. Y., and Fairfield, Conn., Horticultural Society.
18. Lake Geneva, Wis., Gardeners' & Foremen's Association.
- Gardeners' and Florists' Club of Boston, Mass.
19. Rhode Island Horticultural Society, Providence, R. I.
20. Marshfield, Mass., Garden Club.
21. Pasadena, Cal., Horticultural Society.
- Dahlia Society of California, San Francisco, Cal.
22. Dobbs Ferry, N. Y., Horticultural Society.
24. Park Garden Club, Flushing, L. I.
26. Short Hills, N. J., Garden Club, Public Lecture.
27. Tarrytown, N. Y., Horticultural Society.
28. Connecticut Horticultural Society, Wethersfield

Mulching—Successful and Otherwise

Making the Most of Mulches

MULCHES are useful as a means of securing good crops at minimum time and expense. While a well-applied mulch conserves moisture, checks weed growth, and improves the physical conditions of the soil, it in many cases also adds a considerable amount of plant food.

For garden crops aim to choose a mulch that is well adapted and which can be readily applied. Manure, in some form, is the best source of material for mulching. If fresh horse manure is available, allow it to aerate a few days before applying it to the crops. Spread the manure to a depth of four or five inches midway between rows of the crop, gradually thinning it to one or two inches near each row. At this rate of application, 35 to 40 tons of manure will be needed per acre.

In case fresh manures are not available, use rotted manure of any sort or resort to straw, leaves, moss, or lawn clippings. Bear in mind that the latter substances named have little or no value as sources of plant food elements. Shavings, excelsior or sawdust, may be a detriment to the soil if plowed



Midsummer peas with mulch, which is thickest in the middle of the space between the rows

under, and any mulch is more or less difficult to remove.

The time to apply a mulch is as the crop attains enough size to establish itself thoroughly; and apply the material immediately following a cultivation, if possible, gradually thin the mulch near the rows, since evaporation here is less, owing to shade produced by the plants. Moreover, feeding roots of the plants launch out from the rows in search of moisture and plant foods. Avoid placing the material against the plants. Discoloration of the stems is likely to result, while the lower leaves of the plant often turn yellow and drop off.

A little study of the crop in question will determine whether or not mulching will be worth while. Nothing will be gained through mulching early, quick-maturing crops, as lettuce, radishes and spinach, since sufficient moisture is available for such crops throughout their growing season. Mulches will be found of particular value on asparagus, rhubarb, mid-season and late peas, beans, celery, cucumbers, late cabbage and tomatoes. Use the mulch freely on the crops to

be wintered over, rhubarb, asparagus and winter spinach. If manure can be had for this purpose, work it into the soil between the rows in the spring.

Heavy straw mulches will be found a great help in the small fruit plot. Through their use, weeds will be kept down and excessive evaporation will be prevented during the occasional drouth of summer.

Gardeners practicing irrigation will not go amiss by using mulches in connection, especially where the hose method is resorted to. An evenly-applied mulch serves to distribute and conserve the moisture.

New York.

E. L. KIRKPATRICK.

Mulching That Didn't Work

APPRECIATING the beneficial influence of almost any kind of mulching, I have experimented with nearly all sorts of material during the last ten years. I have finally come to the conclusion that no mulch equals a dust mulch, where the soil is reasonably rich.

One of the most peculiar experiences I had a few years ago, when, upon the suggestion of a kind neighbor, I used lawn clippings to mulch rows of beans and tomatoes. The clippings were rather long and cured quickly to hay. They did not help but proved a decided nuisance when, after a heavy rain, wheel-hoeing became necessary. As a matter of fact, for a month afterward, they clogged the wheelhoe cutters and teeth and I said "never again."

There is an additional element of danger in using lawn clippings, even short ones, as a mulch. Unless they dry up quickly they are apt to mildew and infect the soil with acidity. If they are put on thinly, to dry up, they do not act as a mulch. If they are put on thickly, the lower layers will not dry up but fermentation sets in, especially if the weather turns rainy or cloudy. Whichever way you take it lawn clippings in our part of the world anyhow should be used with discretion and experimented with cautiously.

AN OHIO AMATEUR.

The Craftsman Woodpecker

One bird garden maker had as a dominant instinct the assistance of his feathered friends. Throughout his preserve he put up many houses. One day from the centre of his garden he observed two golden-winged woodpeckers, or flickers, fly over the inner hedge and scan with interest a nesting box, resembling a section of a tree stem. Unquestionably they liked its appearance—that is, all but the hole which challenged their criticism. It was too small for their large bodies to slip in and out with ease. The male bird gave a comprehensive glance at his mate and meeting evidently with her approval began to tap with his bill a circle about the hole. As soon as this drafting process was completed he took to the wing, she following. The builder of the garden conceived the idea of helping these birds. He called a man to bring a stepladder and small keyhole saw and under his direction the hole was made larger through following the marking made by the bird. Scarcely was the work accomplished when the pair flew back again. They looked at the hole, the male ran his bill around the enlarged hole, he looked at his mate and again they flew quickly away.—A. L.

December in the South

DECEMBER is the month for the protection of all plants against the severity of the winter. The constant freezing and thawing is disastrous to newly planted trees and shrubs unless very hardy, therefore they should be held firmly in position by being tied to stakes so that the strong winds cannot dislodge them. Heavy snows will break down the evergreens; so tie the limbs together and brush the snow off as quickly as possible and while yet soft. Give tender Roses a slight mulching of coarse manure about the roots.

Keep snow and rain from celery beds by pine tags or straw, held down with boards put over in a sloping manner like a roof in order to shed the rain and snow. Spinach which needs little protection and then only in bitter weather is cared for by coarse manure between the rows, but never directly on it as it will become too tender to withstand the next severe freeze. Carrots, salsify, and parsnips can stay where they grow all winter without any protection after the cold weather is settled. Pull up cabbages by the roots and put in a conical shaped pile with root end up, covered with pine tags or straw, and then with a foot of dirt and firmed down with a spade; a tile put in the top of kiln for ventilation, and on top of tile a bent piece of tin, or inverted V fastened on to keep out rain or snow. Kale and turnip salad stay in the open ground all winter, and upland cress grows everywhere and is good mixed with the turnip leaves as a cooked salad.

Fig bushes and Hydrangea Otaksa can be protected by pine boughs or corn stalks tied about them; the former is much more sightly and is sufficient to keep off the sharp winds.

Coarse strawy manure is all that is needed on the Rose bed, and put on after the ground has frozen—a few tender Roses and standards may be wrapped about with straw or burlap.

AS THE hotbed is not in use for sowing seed until February it is a good place to put the sweet or Irish potatoes. Put first a layer of pine tags or dry straw on the bottom of the bed and alternate a layer of sweet potatoes to the top. Put on the double sash and in the daytime always ventilate by lifting the sash a little, and prop open with a brick. A root cellar would be a great advantage where there are a great many roots to store, but for an ordinary sized family, putting up the roots in kilns has proven quite satisfactory. Store Dahlias and Cannas the same way.

LETTUCE frames need constant attention. Put on the double sash and bank up earth against the frame to keep out the cold. Push the plants to maturity by constantly watering with liquid manure (only in the mornings in cold weather) and water between the plants so the leaves will not get wet. Lift the sash a little every day. One can have lettuce all winter with care and attention to these details.

EVERGREENS like Irish Junipers and others of value should be tied together with soft, but strong twine, to prevent whipping about by the winds, and breaking by the weight of the snow. Do not let the snow remain on the evergreens but brush it off before it freezes hard. Neglect in this has caused serious loss by breaking of the limbs.

If the weather is open and the ground not

too wet plant the Sweet Peas. Make a trench eighteen inches deep and one foot wide, and put in six inches of well-rotted manure, then a few inches of garden soil, and sow the seed on top of this and cover lightly with soil about three inches. Do not fill in the trench until the plants begin to grow in the early spring and then add the dirt gradually. It is better to plant Sweet Peas this month or even in January, for if planted earlier and they begin to grow the cold weather will kill them.

Tobacco stems scattered lightly over the lawn is a fine fertilizer. There is also the black muck, or humus, now on the market especially good for lawns which has the advantage over farm manure for the reason that it does not contain any obnoxious weed seeds.

If the orchard has not been pruned, do it now, and if there is any appearance of San José or oyster scale spray with self-boiled lime-sulphur. It will take several sprayings during the winter to be effective.

IT IS not too late to plant the early blooming bulbs, such as Crocus, Hyacinth, Tulip, Snowdrop, Narcissus, and Jonquil in the open ground. Bring the potted bulbs into the house every few weeks. Hippeastrum, Calla Lily and Amaryllis which have been dormant can be brought in now and fed with liquid cow manure. When planted in the pots a good light loamy soil should be used, and good drainage at the bottom with pieces of old broken flower pots.

Violets, English Daisies and Pansies planted in cold frames need plenty of air every day, and kept covered in bitter cold weather. Water only when necessary and then in the mornings. All of these flowers can be left in the open ground as they like the cold weather, and Pansies will bloom out of doors in a protected place all winter, but in order to have them to gather for the house it is better to have them protected from the snow. Violets and Daisies will bloom in great abundance in February in the frames.

Air the conservatory every day during the winter, being careful to keep the air from blowing directly on the plants. Only water the plants when they need it, and then very thoroughly, soaking the earth in the pots through and through. This is better than a light sprinkling every day, for the roots do not always get the water.

Keep the plants free from aphis, mealy bugs, mites and scale. Spraying with soap solution is good in most cases, but tobacco water is also efficacious. Begin when the insects first appear, so as to get them under control before the plant is injured.

Plant Paper-white Narcissus and Chinese Lilies in water with pebbles to steady them, every few weeks, and thus have a continuous bloom all winter. They can be planted in earth in pots also. They require six weeks to bloom, so the Xmas flowers should be started in November. Roman Hyacinths bloom in less time, taking only three weeks. Plant a few of these bulbs every few weeks so as to have continuous bloom.

With the bulbs, and Geraniums and Fuchsias, and the easy growing annuals such as Petunias, Verbenas, and Larkspurs one can have a very gay window garden with very little care.

J. M. PATTERSON.

The Storage of Potatoes

IT IS of great importance that all the potatoes raised last summer are handled properly in storage. Even when every precaution is taken the wastage of potatoes during the winter is considerable; under bad conditions of storage it is very great indeed. In order that the best methods may be adopted by the small growers, those who have not had the experience in the storage of potatoes should know the chief causes of the wastage.

These causes are: (1) Sweating, Heating and Consequent Rot: often due to insufficient ventilation; (2) Rotting: due to potatoes getting wet at the time of putting them in storage; (3) Injury from Frost; (4) Decay: owing to disease in the tubers at the time of storage; (5) Sprouting of Tubers in the Spring. It is not possible to prevent altogether losses from these causes, but by using the best methods of storage, it is possible to reduce them very materially.

Reasons of Loss

This may be done by taking care to guard against losses from each of these causes: (1) Sweating and Heating occur if the freshly dug potatoes are piled in too large piles, so that the air cannot circulate between the tubers. The risk of loss from this cause is greatest in the fall, immediately after the tubers have been dug, and it is, therefore, important that potatoes when dug should not be put in unnecessarily large piles, nor kept in an ill-ventilated room.

(2) Rotting from Getting the Potatoes Wet. If the potatoes at the digging time are allowed to get wet and to go into storage in that condition, rotting is sure to occur. Be careful to have your potatoes dry before storing.

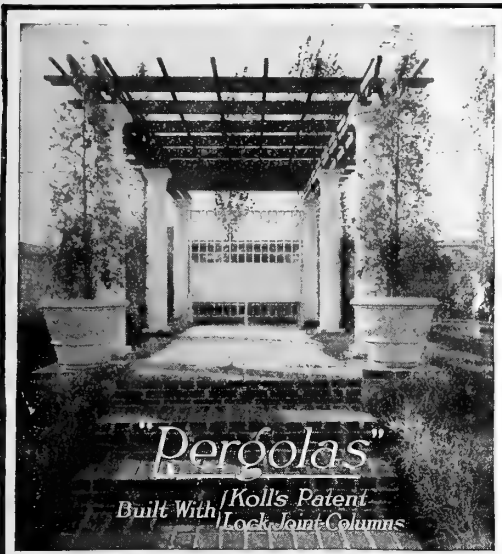
(3) Injury from Frost. Potatoes are easily damaged by frost. If they become frozen, their market value is destroyed. Therefore, take every precaution to protect the tubers from frost before and after digging.

(4) Disease. There are several diseases of the potato which destroy the tuber, and if diseased tubers are mixed with the sound ones, the disease spreads rapidly; therefore, it is necessary to sort the potatoes carefully, eliminating all of the disease, the cuts, culls, and dirt before placing them into permanent storage for the winter. All of the cuts, culls, misshapen and diseased tubers should be fed to the poultry and live stock, but should be steamed or boiled before being fed, as in this way you increase the food value, and also destroy the germs of the disease, so that it will not get into the manure and thence into the land.

(5) By proper ventilation of the cellar or storage room, and by holding the temperature as near 35 degrees F. as possible, you can keep the potatoes from sprouting.

Selection of Seed

Seed for next year's planting should be selected from hills that produce true to type potatoes. The right way, of course, is to select seed potatoes at digging time, and store separately in crates or boxes. By storing selected seed in a well-lighted room where the temperature can be held at from 34 to 40 degrees, with a little ventilation and planting next spring, the grower will make a start toward improving the quality of his potatoes, instead of as in the past, simply planting the culls or runouts.



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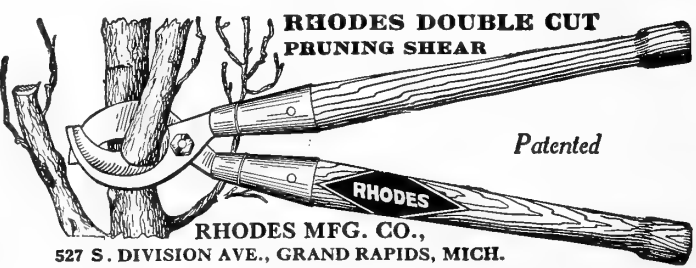



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My Experience with Cyclamen in the House

A POT of beautiful Cyclamen in full bloom was brought me last winter. It was my first experience in caring for that flower in windows, and it soon became a most interesting one. I observed that it was not fitted for the varying temperature of a house where one wants plenty of open windows in mid-winter, for with a puff of cold air from a window away would go the Cyclamen flowers, or buds, wilting as though hot water had been poured on them, so I found that the plant could not be moved about with impunity.

When the first flower slipped off and left its seed pod, curving like the head of a graceful young cobra, the plant became more interesting; when the second one left its seed pod too, interest increased, for the two pods curled in toward each other and formed an arch over the entire plant. I decided to let them ripen, knowing nothing then of Cyclamen justice, but soon one of the stems wilted just below the pod, and I pinched it off at the root, and left the other curving over the entire plant, alone. It took weeks and weeks for that one lonesome pod to ripen, and I husbanded the plant with infinite care lest a draft should wilt the stem before the perfection of the seed. The plant seemed to be giving all its strength to that one pod, for never a new leaf came.

Finally, after patient waiting and watching, I discovered a very slight break in the extreme end of the pod, and lest it should burst and the seed be scattered and lost, I tied a soft white tissue paper over it, and waited until the stem wilted of its own accord; and then waited yet a little longer, and pinched it off the stem, and opening the pod found twenty-one reddish seeds, which I planted at once in a shallow pot with broken things in the bottom for drainage. There was about an inch of soil over the drainage, and a covering of perhaps a quarter of an inch over the seeds. A square of glass covered the pot, and it was put in a curtained window free from drafts. The old plant now began to put up vigorous leaves, twice as large and higher than previous ones, with very pretty markings and almost like wax in texture.

It took the seeds weeks to come up when I removed the glass. The seeds were planted on March 5th, and on June 5th there was one just sending its strangely curved first leaf through the soil, though there were later fifteen out of twenty-one seeds. As I write there are yet five seeds unaccounted for, but as long as there is soil there is hope that they will come forth. Several—in fact almost all that have a well defined first leaf also have put up a second, which varies from whitish to green and reddish in color, and no two have leafed the same either in manner or in shape and coloring, all varying from sharp points to blunt points and from dark green with faint markings to light green. The markings vary, too, some run with the veinings of the leaf and others follow the shape. I shall have a window box of Cyclamen from those now growing.

Altogether, I have never had so peculiar an interest in growing any plant, and I have window-cultured plants for many years for my own and my family's pleasure. The color of the flower on the parent plant was white with faint rose base.

And now the parent plant is sending up an infinite number of flower buds, and the leafage is becoming shorter and smaller.

Brookline, Mass. E. VON R. HOVEY.

Christmas Gifts "DeLuxe" for Your Gardening Friends

Gifts that *prove* you have given serious thought to your friend's inclination, gifts fit for any home, gifts of a character that will create exceptionally grateful recollections, such is the gift line of



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Of simplest make and best metal construction, trouble proof and long lasting. Adjustable to any kind of stream, operated with twenty pound pressure. Type shown is mounted on stand for hose connection. Send for descriptive price list and Special Offer TO-DAY.

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Grow the following for both beauty and usefulness:—

- Barberry, Japanese, with red berries.
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- English Strawberry Bush, bears fruit all winter.
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- Yellow Flowering Currant, with edible fruit.
- Rosa Carolina the wild rose with red hips.
- American Elder, with purple fruit in clusters.
- High Bush Cranberry, red berries all winter.

Price—Any of above averaging three feet high, 35 cents each

Splendid Christmas Gifts

To make bird lovers happy, we will send one each of above ten bird-garden shrubs for \$3.00. Orders booked now for Spring delivery. *This offer good only during December, 1917.*

A **Helpful Catalog** awaits your call. It is ready to acquaint you with the resources of our 800-acre nurseries, located in New Jersey and on Long Island. We are prepared to render the most **complete** service in plants in this country. If it's worth growing, we have it—in a quality beyond compare. Write or order NOW.

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Plants for a Garden

IN THESE days of conservation and economy, why give useless gifts? What more beautiful thought could be conveyed than the suggestion of plants or flowers that will remind the recipient of you, during the whole of the following year?

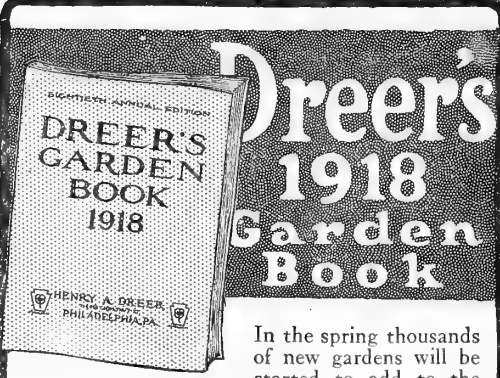
We have arranged the following series of SUGGESTIONS any one of which will be sent prepaid in the spring to any address you desire:

- No. 1. 12 dormant, imported, two year old Rose plants; 6 varieties \$5.00
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Send us your order now with names and addresses of friends to whom you wish the plants sent and we will mail them our special Christmas card in time to reach them by 'Xmas Eve' advising them of your gift of plants.

A "live and lasting" 'Xmas present everyone will appreciate

Charles H. Totty
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**Dreer's
1918
Garden
Book**

In the spring thousands of new gardens will be started to add to the food supply, and thousands whose 1917 gardens were not an entire success will try again.

Dreer's Garden Book is more than a mere catalogue. It is a companion of dependable information for the gardener; and if the expert cultural directions are followed will save money and disappointment. Tells when to plant, what to plant and how to plant.

It contains 256 pages, four full page Color plates and four duotone plates. Lists all the dependable, tested standard varieties of vegetables and flowers as well as the promising novelties.

Whatever is worth growing you will find in Dreer's Garden Book for 1918, with descriptions and cultural notes.

Mailed free if you mention this magazine.

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THE most complete stock of hardy plants in America. Illustrated catalog of hardy plants, shrubs, trees and bulbs sent free on request.

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Then crown your efforts with a Callahan Sectional Greenhouse—of any size you need—at profitable figures for you. Built in our factory and can be erected complete without delay. Catalogue on request.

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Holiday Gifts that the Gardener Can Send

THE garden owner's opportunities for making gifts that are appropriate to the time and the season is indeed exceptional. The kitchen of the city apartment is not an easy place to put up preserves, jellies or pickles "such as mother used to make" and there is nowhere to keep them even if one were sufficiently heroic to attempt this kind of cooking in such cramped quarters. This year when so many are busy knitting or sewing for the Red Cross why not send something to eat instead of the usual "fancy work"? This will be in touch with the spirit of the times when economy is the watchword.

A glass of jelly, a small jar of rich preserves, brandied peaches, spiced fruit, grape catsup, jam, watermelon preserves, chili sauce, homemade mustard pickles, are among the most delightful of presents to receive. These can be sent safely by parcel post or express. Each glass or jar wrapped separately and packed in a box with wads of paper, or excelsior, hay or other soft material put tightly between to prevent the glass from breaking. If the new pasteboard containers are used so much care in packing will not be needed.

FRESH fruit in good condition is always appreciated. A box of carefully packed winter pears, a dozen big red apples (each one a perfect specimen), oranges, grape fruit—according to the section of the country—are none of them hard to send. Such things can, of course, be bought in every city market, but fine ones are expensive and many of them will have been on such long journeys or been for so long in cold storage that they have lost much of their original flavor. The average person greatly prefers fruit grown nearer home.

Then there are mince pies, fruit and spice cakes and plum pudding, all possessing the right Christmas flavor and all within reach of the country woman. These things are expensive in this year of high prices, but when you come to count the cost you will find that the outlay for a small mince pie is no more than for an elaborate sachet or a coat hanger decorated with superfluous ribbons. And it is a *very* dyspeptic person who would not prefer the pie!

Dainty little boxes covered with tissue paper or cheap flowered cretonne, or made of strips of bark glued on a pasteboard foundation, and filled with nut meats, either salted or plain, are another Christmas possibility for the woman who lives where the hickory tree, the butternut, the hazelnut, etc., are available.

WHERE chestnut trees are numerous why not use some of the nuts for homemade marrons glace? This French sweet that is considered so great a delicacy is just as easy to make over here as in Europe. The American chestnuts are smaller, but they have a finer flavor. Shell the chestnuts and then boil in a thick sugar syrup until soft. If you like the flavor put a little vanilla in the syrup. Then take the chestnuts out of the syrup, drain them and let them get thoroughly cold before wrapping each one in waxed paper to prevent sticking. If these are packed in a pretty box, one covered with holly paper or some dainty crepe paper, or cretonne or silkoline, they make a delightful gift.

PACKAGES of garden seeds, a box containing half a dozen choice bulbs carefully labeled and wrapped around with paper on which is written directions for their culture, sachets of dried Rose leaves mixed with spice and sachet powder, sachet, woodland treasures such as trails of Partridge-berry which may be planted in tiny pots or put in the glass bowls that come especially for that purpose make suitable gifts. Wreaths made of Christmas green, or Holly, or of Pine tassels decorated with tiny cones, bunches of Mistletoe, small spruce trees from a foot to eighteen inches high to be used for table decorations, all these can be used for Christmas remembrances and may be had from the nurserymen ready to ship. Pies and cakes should always be boxed. Pack pies with a pasteboard plate or round piece of pasteboard on each side to prevent breaking and loaf cakes with pasteboard stays put on in the same way before boxing. Smaller cakes should be wrapped separately in waxed paper and then each one tied up in white tissue or holly paper before they are put in boxes. Fruit must be sent in stout pasteboard, corrugated or light weight wooden boxes. Each separate apple or pear should be wrapped in tissue paper and then packed with soft wads of paper between to prevent bruising.

Recipe for Bayberry Candles

IN THE Bayberry country Bayberry wax candles can be made. It takes a quart of berries to make one of the fragrant candles. The bayberries need not be used when picked but can be dried and the wax boiled out of them at any time desired. To each quart of berries add two quarts of cold water. Boil steadily until a waxlike substance appears on the surface in patches. This must be skimmed off and saved. It can be left to harden and more added from time to time as fresh berries are collected. When sufficient to make two or three candles has been obtained in this manner it should again be boiled in water when all the dirt and residue of the berries that it contains will settle to the bottom of the pan leaving a pure fragrant substance of a soft sage green color. To make the candles hang three or four wicks from a stout piece of wire or a thin stick suspended from a shelf or any place where they will hang free and not come in contact with anything. The thick rather soft white string that bundles are sometimes tied with makes an excellent candle wick. Melt the wax in a pan small enough to give it the depth of six inches, for this is the height of the candle when finished. As soon as the wax is liquid take down the wire that holds your wicks, dip them in the hot liquid and hang them up again. When the wax is hard they must be dipped again and redipped until they have received thirty-five coats. When done they are very artistic looking objects covered with humps of wax tapering to a sharp point. But if one prefers, the wax can be poured in paper moulds made by winding stiff writing paper around a candle to get the shape and then gluing on a bottom of paper. In this a hole should be punched so that the wick can be run through the centre.

Wrap the candles alternately in red and green tissue paper and enclose in a small box covered with holly paper. Write on a Christmas card: "A bayberry candle burned to the socket brings luck to the house and wealth to the pocket."

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More Comfortable, Healthful, Convenient

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Stockholders holding 1 per cent. or more of total amount of stock on Oct. 1, 1917: F. N. Doubleday, Garden City, N. Y.; W. H. Page, London, England; H. S. Houston, Garden City, N. Y.; S. A. Everitt, Garden City, N. Y.; A. W. Page, Garden City, N. Y.; Russell Doubleday, Garden City, N. Y.; Nelson Doubleday, Garden City, N. Y.; N. de G. Doubleday, Oyster Bay, N. Y.; W. F. Etherington, New York City; R. M. Fair, Chicago, Ill.; H. W. Lanier, Eliot, Me.

Known bondholders, mortgagees, and other security holders holding 1 per cent. or more of total amount of bonds, mortgages or other securities: None.

(Signed) DOUBLEDAY, PAGE & COMPANY By S. A. Everitt, Treasurer

Sworn and subscribed before me this 1st day of October, 1917.

(Signed) Albert H. Jennings, Notary Public Nassau County, N. Y.

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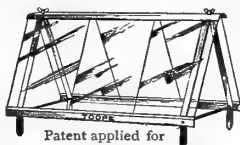


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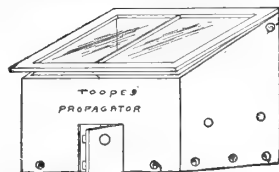
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For Forcing Vegetables, etc., is a rigid frame, so braced that glass cannot be blown out, and is water-tight. Price, \$1.25 each (without glass). F. O. B. Boston. Write for descriptive circular of these novelties. Most horticultural supply stores sell them

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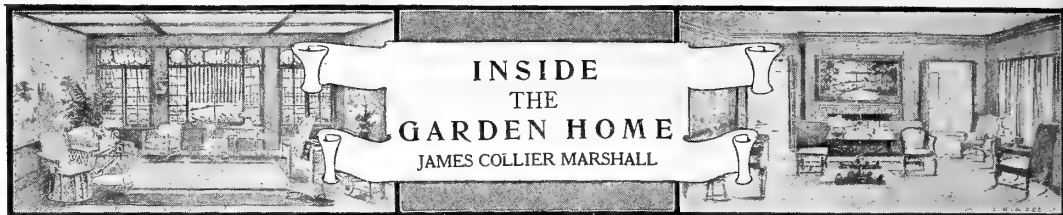
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Real Bronze Colonial Designs
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Also Bird Baths, Garden Benches, Fountain Sprays and other garden requisites.

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WILL MEND IT

Now for 1918!

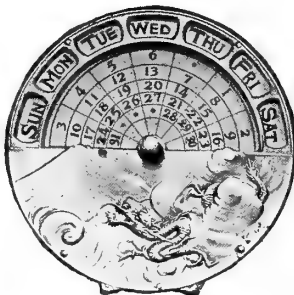
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Japan sends us this perpetual calendar of antimony

neglected field but now most happily revived.

To-day one finds really excellent designs in iron, steel and brass in architectural hardware and accessory decorations, while for fireside tools these new patterns are not only distinctive in pattern but equal in workmanship to the old ones. Indeed, I have recently seen fire screens and fenders of hand wrought and engraved steel that needed no apology when compared with antiques. These base metals are being widely used for lighting fixtures and are very good-looking and effective when not too heavy. Very often they are tinted in antique tones of color to harmonize with the decorative scheme.

Appropos of lighting arrangements, one of the best of the new ideas is the use of perforated metal for lamp shades. These are made usually in the round empire shape of smoothly joined metal sheet finely perforated and decorated with hand-painted designs that, showing to great advantage by day, seem fairly alive when lighted.

These punctured metal shades are to be had also in forms for ceiling domes, and they are by far the most attractive for this kind of fixture one can find. However, I have seen another interesting arrangement that may interest some. It was an homemade one and as dainty as it was artistic. Simply a crocheted net work to cover the plain half round glass bowls that covered the ceiling lights, and from this depended three netted fringes about two inches wide, one around the widest circumference of the bowl, at the ceiling, one half way down, and the third and smallest about three inches in diameter at the bottom. No descrip-

tion can give an idea of its charm. For intimate, simple arrangements it can hardly be surpassed.

Metal is being used considerably this season for trays, many new patterns of which are graceful in line and prettily decorated, the one pictured here having naturally painted roses on a black ground, though most of them have far more gorgeous patterns of flowers, with birds, parrots, in particular predominating, the American eagle being very popular.

Hanging baskets of various descriptions and bracket arrangements for flowers are also to be had in profusion.

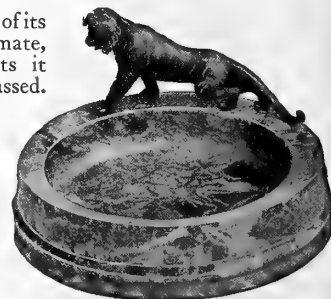
These are decorated in any manner desired, though the Italian patterns seem to have a preference over all others. Of such is the bracket shown here, the half ellipse of tin being decorated with birds and flowers on an old gold ground all antiqued, while the bracket is of carved wood in antiqued gold.

Another goodlooking bracket has a scroll fenced shelf supported by an arm of acanthus foliage all painted in shaded gray green and gold, while the plant receptacle is plain green, the scroll fence forming its decoration.

There are some very good vases and low dishes for cut and growing flowers, to be found

among the importations from Italy. Like most of this ware, these are very gay in color and decorated with rococo flower and fruit patterns in relief. They are the best for dining table centre-pieces, since their shapes are especially adapted for fruits. These also may be had in open work pottery—quite an open basket weave in effect and rather bizarre in form, many of them being barge like; others are cornucopia shaped. All are ornate, though very effective.

Entirely different, yet every whit as entertaining, is a new curate for tea table use, made of oak and brass. This little piece has two shelves, quite capacious—each will hold two plates, and this is so constructed that the whole folds quite flat, the oval shelves breaking in the middle.



This red marble ash tray is very good-looking



Florentine patterns in antique tints decorate this excellent bracket tin for flowers



Exceptionally good for refreshment service is this dainty tray, decorated with deep pink roses and green foliage on a black ground



Floral festoons embellish this jar for fragrant salts to freshen the atmosphere

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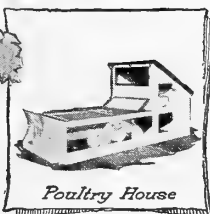
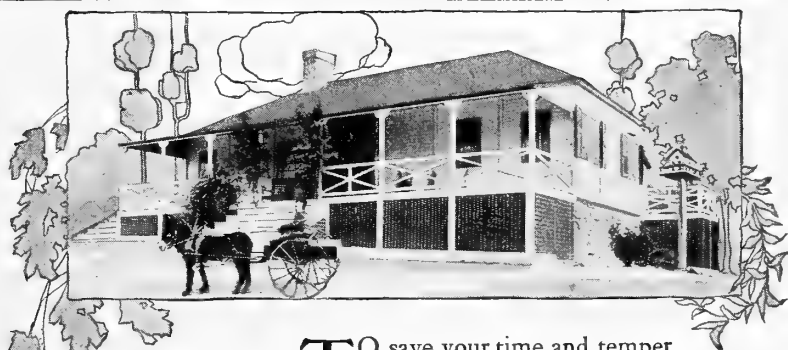
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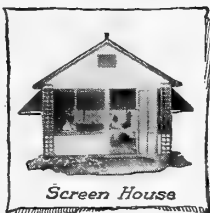
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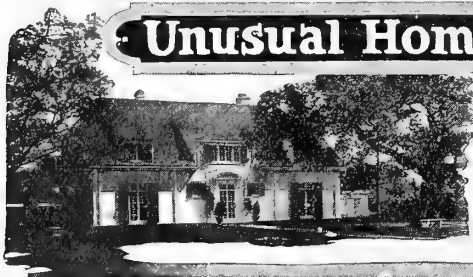
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GARDEN

JANUARY 1918

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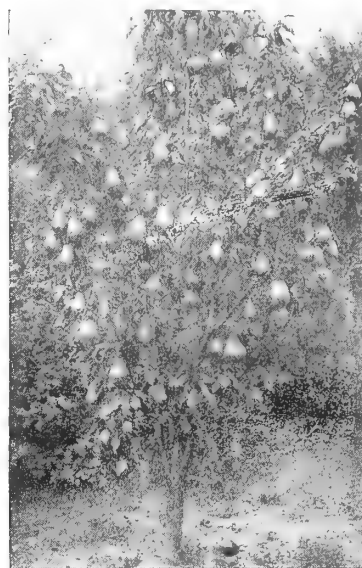
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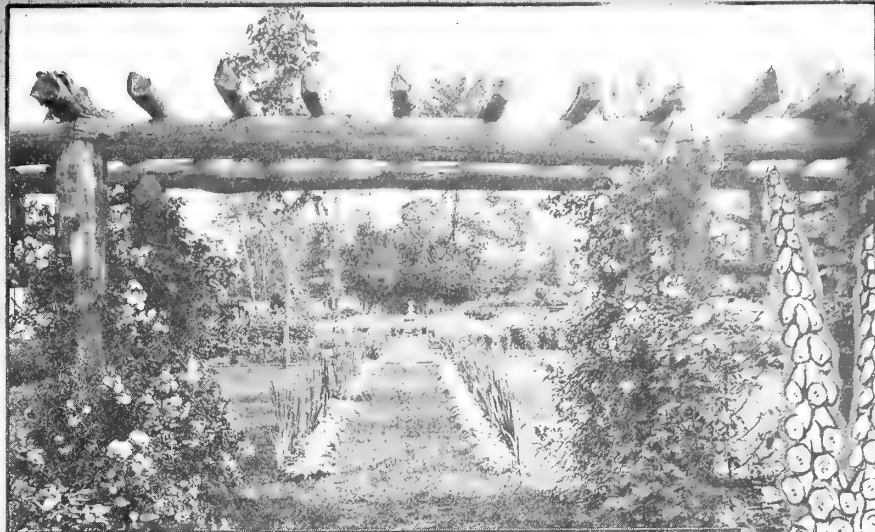
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Of last year's shipments to America, not a single one was lost because of the U-Boats. So do not hesitate to order, because of that contingent.

But bear this important fact in mind; that if you want your seeds early, you must order early.

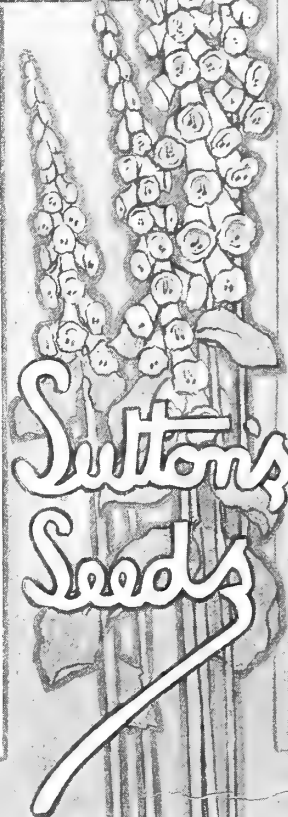
Send 35c. for Garden Catalogue. With \$5 purchase of seeds, the 35c. will be promptly refunded.

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It not only describes and illustrates the hundreds of beautiful hardy kinds of Fairfax Roses that will thrive in your garden, but it tells you how to grow roses with the greatest success. If you are having trouble with your roses, write me about it and I will gladly advise you what to do.

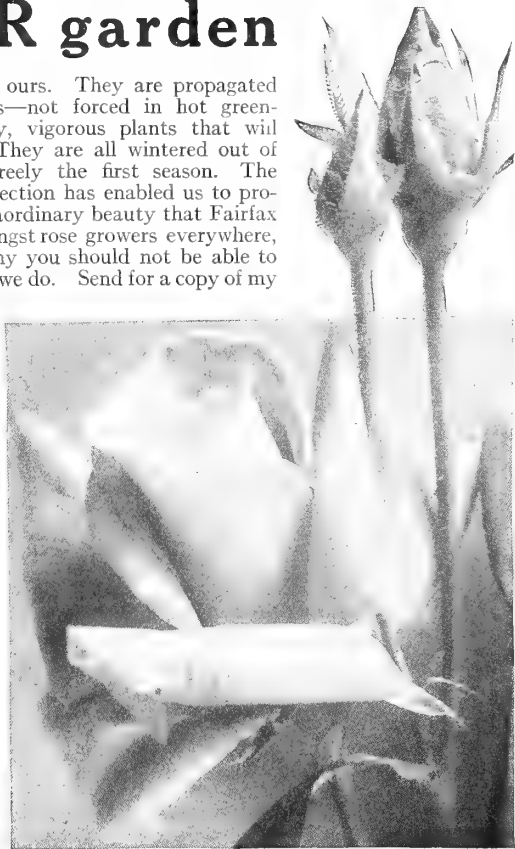
The beautiful Fairfax Killarney Rose shown here—an exquisite pink. Heavy 50c 2-year old plants

W. R. Gray

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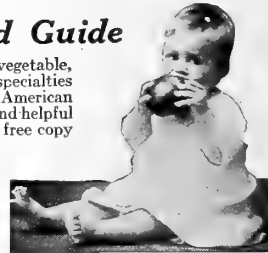
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Search Light, the yellow Miss Stredwick.

Topaze, a dahlia of distinct and peculiar color, almost weird. Base of petals nearly white but soon changing to magenta, purple and rose blended.

Valiant, a giant flower of brilliant crimson carried on giant stems.

Washington, the flowers are very large and of pronounced incurved form, being both broad and deep. Color crimson.

Also the best of the new Hybrid Cactus.

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Cream King, Frau G. Scheiff, George Walters, Futurity, Joffre, Mon. Lehrmand, King of Autumn, Leviathan (Eng.), Princess Mary and Warneford (the very best white).

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From 10c up to \$2.00 a bulb

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- 20, my selection, for \$1.00
- 4 50c ones, my selection, for \$1.00
- 8 25c " " " " \$1.00
- 12 15c & 25c ones, my selection, for \$1.00

Catalogue ready January 15th, Send card for it.

Have had a fine season for root growth and tubers all good size. Also have had a fine long blooming season, and clumps could be well labelled all true to name.

MRS. H. A. TATE DAHLIA GROWER AND IMPORTER

Old Fort

North Carolina

THE GARDEN MAGAZINE

JANUARY, 1918

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LEONARD BARRON, EDITOR



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Entered as second-class matter at Garden City, New York, under the Act of Congress, March 5, 1879



You may recognize this one. Mr. C. Fierson, of Philadelphia, Pa., is the enviable owner.

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Practicalness of the Leanto Type

ONE of the best reasons for liking a leanto conservatory is because it seems to snuggle up to the residence in such an unobtrusive way, that it looks like a fore-thought, instead of the usual after-thought effect.

Then there's its expense. Or perhaps lack of it, is the better way to put it. It costs less than others.

But for conservatory purposes it is exactly as good as those that cost many times as much.

For sun rooms—places in which to let Old Sol take the kinks out of our muscles as well as over tensioned nerves—it is altogether ideal.

It happens that in our catalogue there is a good bit of practical Leanto information.

To which let us add, you are most welcome to a copy.

If you care to have one of us come and talk over your ideas on either a conservatory or greenhouse, we will gladly do so; at your suggestion.

Hitchings and Company

General Offices and Factory—Elizabeth, N. J.

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1170 Broadway

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40 So. 15th Street

Livingston's Way of helping New Garden Enthusiasts

Perhaps the hardest task confronting the enthusiastic beginner in gardening is to make out a Seed Order. He knows which *kinds* of vegetables he would like to grow, but not which sorts or varieties. We have made special efforts for years to help home gardeners solve this problem correctly, and now point the easy way:—Just mail a Dollar Bill or your check and order one of

\$1 Livingston's Great Dollar Collection \$1 of "True Blue" Vegetable Seeds

One of the greatest *true* bargains in seeds obtainable in this country. Every sort included represents the best of its class. Some are high-priced specialties obtainable only from us and the packets are of liberal size.

We sell this collection so cheaply because, first of all, we consider every one sent out the best advertisement imaginable for "True Blue" Seeds. Secondly, we put up this collection in thousand lots, *before* the Spring rush, and orders for it are filled economically. Here is what we'll send *postpaid*:—

32 Packets of 32 Valuable Varieties, as follows:—

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| <ol style="list-style-type: none"> 1. Beans—Stringless Green Pod. Fine green pod. 2. Beans—Dwarf Hardy Wax. Fine wax pod. 3. Beet—Detroit Dark Red. Very early and tender. 4. Beet—Dewing's Blood Turnip. Very tender, long keeper. 5. Cabbage—All Seasons. Flat heading sort. 6. Cabbage—Ideal Winter. Solid, tender. 7. Celery—Columbia. Good flavor and keeper. 8. Cucumber—Klondyke. Dark green, shapely pickle. 9. Cucumber—Livingston's White Spine. Best slicer. 10. Sweet Corn—Country Gentleman. 11. Sweet Corn—Livingston's Early Sugar. Early and sweet. 12. Lettuce—Big Boston. Tender, large headed sort. 13. Lettuce—Grand Rapids. Finest Early Curled. 14. Lettuce—Wonderful. Fine heading sort. 15. Water Melon—New Chilian. Quality very delicious. 16. Musk Melon—Netted Gem. Green flesh. Early sweet. | <ol style="list-style-type: none"> 17. Musk Melon—Perfection. Salmon flesh; delicious. 18. Onion—Yellow Globe. Best for general crop. 19. Onion—Red Wethersfield. Fine; good keeper. 20. Pepper—Sweet Salad. Sweet and prolific. 21. Parsnip—Hollow Crown. Large and extra sweet. 22. Parsley—Moss Curled. Very fine green variety. 23. Peas—Advancer. Early, sweet prolific. 24. Peas—Gradus. Large pods, full of sweet peas. 25. Radish—Cincinnati Market. Great favorite for early. 26. Radish—Chinese Rose Winter. Bright red; white tip; early. 27. Radish—Livingston's Pearl. Fine long, white variety. 28. Squash—White Bush. 29. Squash—Hubbard. Fine for Winter use. 30. Tomato—Livingston's Favorite. Fine Red variety. 31. Tomato—Livingston's Beauty. No better purple sort. 32. Turnip—Purple-top White Globe. One of the best. |
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With each collection we will send, with our compliments, a packet of *either*, Tall Mixed Nasturtiums or Livingston's Fine Mixed Sweet Peas, to acquaint you with "True Blue" Quality Flower Seeds. To help you score best results with the vegetable seeds, we also include an instructive leaflet giving detailed culture directions. Besides selling seeds we make it our business to help customers to succeed with them.

Write for Catalogues TO-DAY A postcard will put your name in our mailing list to receive the different editions of our catalogue during the year. You will find our Annual full of useful culture directions, and free of exaggerated descriptions. True-to-nature illustrations help to make it a dependable guide in selection of just the sort you'll like. Write for our large Annual today, and "lest you forget," order one of the Dollar Collections at the same time.

The Livingston Seed Co.
100 High St. Columbus, Ohio



Announcement

Our 1918 Spring Catalogue will be ready for distribution on or about January 1st.

It will contain a complete description of the latest *Novelties* and *Specialties* in vegetables and flowers, as well as *Standards*, which can be grown in your garden.

Its pages, attractively and conveniently arranged, with pictures and text, are full of useful information which we are sure will help you to make your vegetable and flower garden a success.

Let us send you a copy of this catalogue. It's free for the asking.

In writing kindly mention "Garden Magazine"

Stumpp & Walter Co

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It is handsomely illustrated and contains the largest and finest collection of gladiolus in the world and the best cultural notes, either for growing prize or show flowers, or the usual garden culture.

Many grand new varieties of our own will be offered. This catalogue is free.

Address the originator of the Ruffled Gladiolus.

A. E. KUNDERD

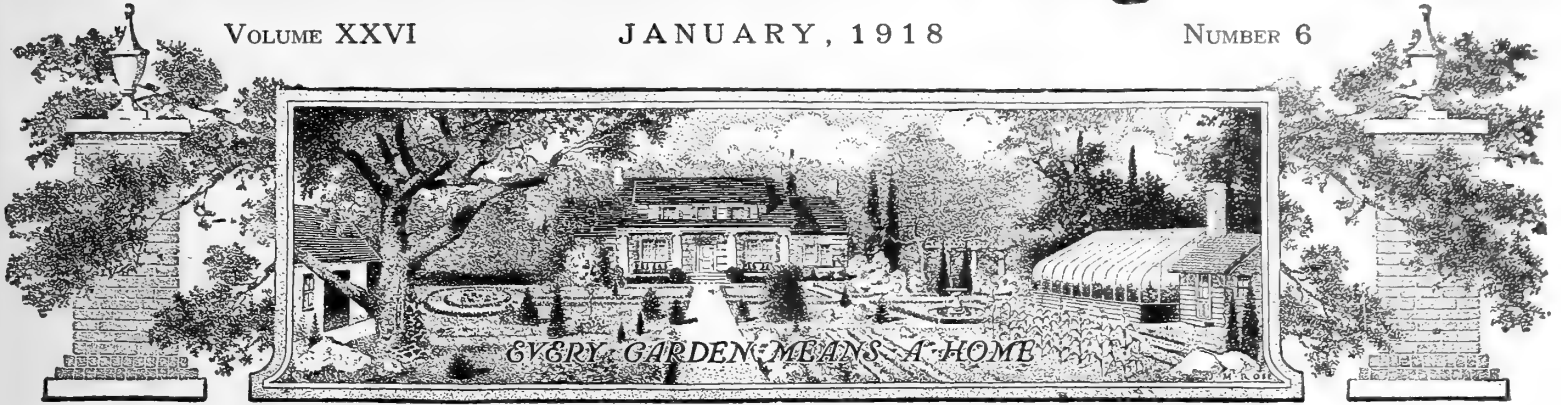
Goshen, Indiana

The Garden Magazine

VOLUME XXVI

JANUARY, 1918

NUMBER 6



AMONG OUR GARDEN NEIGHBORS

"Our Object is . . . to Win the War"

FROM "over there" on the Western Front, a letter by one of the GARDEN MAGAZINE organization bears this appeal: "This is no time for sentiment! Work, work, work, and send us men and men and men as well as ships, more ships, and more ships!" This is a direct appeal to each reader of this magazine. It presses home the needs of *increased gardening activity* during the year before us. It urges the putting to work of every bit of personal effort to make the earth fruitful, because without food, *what good are men and ships?* During the past year America took mighty strides toward becoming a land of productive gardens. But let us not rest on our laurels! Though much was done, much yet remains to be done to make us truly live up to every gardening possibility. Not only must more individuals become active in food producing gardens; but many, who already help to fill the world's larder, must contribute *more!* Small gardens must be made larger or, precluding such opportunity, must be made to yield more by more systematic planning and efficient managing. Large gardens must be made more productive of such foods as represent concentrated energy in the highest degree.

Put your garden on an efficiency basis as never before, thinking always of *how your efforts affect the country* and its conduct of the war rather than how the work benefits you, individually. All garden plans for 1918 must embrace the growing of more vegetables, fruits and flowers; the planting of more shrubs and trees that stand for permanency and real investment; the use of more modern tools to economize and shorten labor which thus becomes available for *the one big job* confronting us as a nation: the Winning of the War. *Your plans* should include a careful study of books on the subject of gardening, always keeping in mind that THE GARDEN MAGAZINE calls every month to help you score better results. One important aid to successful gardening efforts during the months to come will be found in the use of more and better tools! You must make *more gardens and bigger gardens in less time with less help!* This does not mean devote less time to gardening! But rather, to do in one hour what you have hitherto been doing in two. If you learn of a

better spade, a hoe that's easier to handle, an implement that will do more things in less time than could be done in the old-fashioned way, *get it;* and if you already know of such tell the Garden Neighbors about it.

Gardening with plants, shrubs and trees of a *permanent* character will assume a new significance. Why not commemorate important events by planting living monuments? Celebrate victories of "your boys" by setting out groves and orchards? What finer monument to man's wisdom than stately nut bearing trees, memorial shade trees, or evergreens, fruit laden avenues, or permanent gardens in which future generations may learn to forget much of the hate this war is sowing?

And then, there is the 1918 flower garden. Flowers are messengers from a world of cheer—"triumphant assertions that a ray of beauty outvalues *all* the utilities of man" as Emerson has expressed it. Flowers are sent to brighten somber days, to gladden the heart on happy occasions. Flowers will play their part as long as the world is swayed by human emotions. Though the war seems to be one of machinery, it still takes humans to use the machines, and humans are still governed by the eternal spirit of the race. *Grow flowers to carry your spiritual messages to friends in need of companionship.*

The well balanced garden will yield food for the body as well as for the soul. Grow more fruit! Fruit is nature's gift of wholesome nourishment served in most appetizing form. *Eat fruit and save sugar.* Eat nuts and save meat. By eating fruit from your own gardens you will save food for the fighting men.

In the vegetable garden, exercise wise care in selecting profitable kinds. Select varieties that yield double the crop of obsolete sorts in equal space. Grow such types only as yield a maximum amount of food per square foot. Grow more root crops for storage and other vegetables suitable for canning and drying. Grow no more vegetables of a perishable nature than you actually need. Above all, help husband our seed resources! While stocks on hand are ample to go around, the patriotic gardener will save and economize in seeds, for without them our last line of defense is threatened; and the President has well said "our object is, of course, to win the war."

But, Be Reasonable

THE approaching garden campaign for *more food* will be better planned than that of last year which was, so to speak, caught "on the run." The season was already well advanced when the appeal for more gardens was issued. The response was immediate, wonderful indeed. According to the annual report of the Secretary of Agriculture "The home-garden campaign of last spring and summer, part of the effort to increase the Nation's supply of war-time food, stimulated, it is estimated, the planting of from 200 to 300 per cent. more gardens than ever before had produced food in the United States in one season." But looking backward it is now obvious that some of the effort of last year was misdirected energy. Lawns that had cost hundreds of dollars were converted into second grade potato patches yielding but a tithe of their cost; golf courses were sacrificed in hysterical haste. These, and similar spectacular things; the while other and larger lands and fields behind were left untilled and unproductive. There is no excuse this year for even unintentional vandalism, not even in the name of patriotism. The problem before us is clear, and plans can be made to have necessary cultivable areas well in hand in due season. Equally as important as planning for plenty is accuracy in gauging one's requirements. Remember that it is just as bad economy to over produce and waste as it is to under produce and want. Space wrongly utilized is taken from effective production. Real economy lies in producing the right quantities of the right kinds at the right times, in which connection the carefully worked scheme on page 195 will repay studying.

We Want Daylight Saving

CONGRESS needs to be urged to pass the Daylight Saving Bill introduced into the Senate and unanimously passed by that body. Every home gardener could use one hour extra daylight every evening to great effectiveness. It would add millions of dollars' worth of produce to the country's yield. Daylight saving is already adopted by twelve European countries; Canada and Nova Scotia want it and are only waiting for us to act. Turning

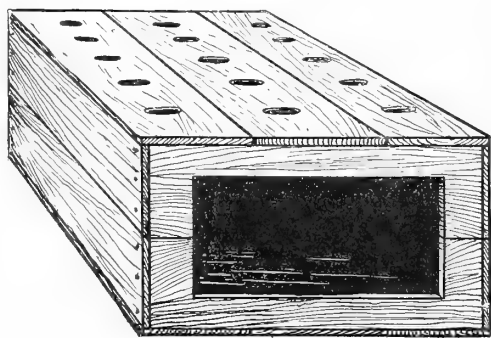
the clock forward saved 300,000 tons of coal in England last summer; France saved \$10,000,000 in coal and light. We need daylight saving! Send a letter *to-day* to your Congressmen and Senators urging favorable and immediate action. We must save coal and relieve freight congestion.

What Will Happen when an irresistible force contacts an unmovable body?" Until this month I have never had a satisfactory answer; now I have! Quack grass taught me: The irresistible force will go through the unmovable body just as dozens of quack grass rhizomes went through potato tubers.—M. G. K.

Topworked Apples.—The Iowa Experiment Station is interested in investigations concerning the topworking of desirable apples upon hardy stocks, and wishes to secure information from any one having facts respecting observations and experiences of the matter. Any published reports of observations, experiences or experiments bearing on this question in bulletins or in popular or technical horticultural literature will gladly be received by S. A. Beach, Chief Dpt. of Horticulture, Ames, Iowa.

Home-Made Potted Plant Fumigator.—In most homes one of the greatest deterrents to the having of some potted plants is the difficulty in keeping them free from lice or scale, while if these pests are not kept in check the plants are greatly injured, if not entirely ruined. Even though fumigating with tobacco is an effective way of keeping down the pest, in most homes there is no suitable arrangement whereby such fumigating can be done without at the same time subjugating the family also to the fumigating. A few years ago, while visiting in Montreal, I chanced upon a French woman using an ingenious but simple device in fumigating her potted plants.

To construct it, first secure an oblong box at least six inches deep—an old soap box serves



Practical fumigator for house plants

very nicely—and bore several rows (the number depending on size of box) of one-inch holes in the top of it. These holes should be about six inches apart each way. Then in one end of the box cut an oblong opening large enough to admit your hand and a saucer. Next, take several (again depending on size of box) old stiff paper flour sacks, unfasten along the side and bottom folds and paste together into a strip that will just go around the box and lap well, thus giving you one large bag of a size to just slip snugly over the top of the box. In fitting together the bags allow a liberal width overlap at all seams



Sand Lily (*Leucocrinum montanum*) a white Crocus-like flower of the Rockies blooming in spring

so that they will be air-and-smoke tight. To use, place the pots of plants that are to be fumigated on the perforated top of the box, arranging them so as to cover but few (or none) of the holes. Next place on an ordinary earthenware saucer a couple of tablespoonfuls of ground tobacco and upon this drop one or two live coals. Place the saucer inside the box, draw the air-tight flour-sack hood over the box and tie tightly at the bottom. The amount of tobacco will vary with the surface size of the box and air space within the hood. But it is well to remember that in fumigating, a relatively light treatment performed twice, a day or two apart, is as effective in destroying the lice as is one heavy fumigating which may be so heavy as to injure the plants, temporarily, especially when one is not experienced in gauging the amount. The kind of tobacco to use is that known as ground tobacco and which can be secured for a few cents an ounce at all horticultural supply stores.—L. G. B., Schenectady, N. Y.

The Long and the Short.—I was taught that a vegetable garden should be planted in long rows for convenience in working. This may be all right for horse cultivation, but I have found that the small, hand-worked garden is better in several ways if the rows run crosswise. More or less walking through the garden is necessary in planting, working, weeding and spraying. In long rows, this traveling is done between the rows, and the surface soon gets tramped down to the detriment of the vegetable growth. If the garden is not very wide, the rows may extend across its width, but sometimes it is best to have a narrow pathway through the centre, and work each way. Thus much of the work may be done from the path and the outer margins, without trampling the soil. In sowing small stuff after digging the ground over, I use a long, wide board, using the edge to mark the rows, and walking on the board to do the work of fertilizing and sowing. In this way, the work is finished without a foot-fall on the loose earth. Weeding, fertilizing and spraying can be done with much less trampling of the soil. Vegetables like radishes, lettuce and beets, which require thinning and frequent gathering, can be secured much more readily. Corn, and possibly other plants, will be better pollinated if in several short rows side by side rather than in one long

one. If necessary to spray certain vegetables, it is more readily done when all are in a block together than in a long row. From about every point of view, the crosswise short rows are preferable to the longer rows.—F. H. Valentine, Ridgewood, N. J.

The Sand Lily.—Among half a dozen of the earliest and really lovable spring flowers which are characteristic of the mountains, is the Sand Lily, *Leucocrinum montanum*; literally, a White Lily-of-the-Mountain. In method of growth it is not unlike the Crocus. It has narrow, grass-like foliage from a cluster of fleshy roots instead of a bulb or corm, and the miniature white Lilies are borne on the slender flower-tubes in generous profusion. The clumps increase in size quite rapidly so that a large plant will produce in a season one hundred or more crystal-white, fragrant blossoms within a period of a few weeks. Curiously, the fruiting portion of the flower is never elevated above the ground-level, so that the seeds are ripened below the surface and probably are scattered by birds and mice who seek them for food. The Sand Lily grows naturally in soils varying from clay to a light loam, preferring a medium loam, a sunny position and good drainage. In the East it may be grown appropriately as a rock-plant or in any sunny spot not excessively wet. It has demonstrated its ability to thrive and increase year by year in cultivation far from its native habitat, and it promises well as a garden flower.—D. M. Andrews, Colo.

An Experiment with the Potato.—Last year a great many people made a study of "the kindly fruits of the earth." I have been one of them and I am going to tell you what I discovered by experience. The most important thing seemed to be the potato. The question was how to get the best and fullest results at the minimum expense. I found it was quite possible to eat your cake and have it. We had the potatoes peeled in the ordinary way, cooked and ate them, and then planted the peelings, making sure that there were at least a couple of eyes to a hill. The result was a fine crop of potatoes and as many in a hill and as large in size as though we had planted the quarterings. With potatoes as high as they were last spring this was a great economy. When it came to digging them up we changed our usual methods. We had always pulled the vine up and cleaned the hill out. Not so last year. There are always quite a number of very small potatoes clinging to the vine. They are too small for use and are usually thrown away. Last year we dug all around the hill, getting out all the large potatoes and left the vine with the little potatoes in the ground. By fall the small potatoes were big ones and consequently there was a second crop out of the wastings. That ended my experimenting with the no longer humble spud. I felt I had learned quite a good deal.—Emily Halson Rowland, Conn.

Pepper Vine.—Bernard H. Lane, of Washington, D. C., writing of the Pepper Vine in the February (1917) GARDEN MAGAZINE, expressed the wish that some venturesome gardener north of the Mason and Dixon's Line would try it and report. So I wrote that I was venturesome enough to try it on the bleak northwest side of a New Jersey hill, and in the spring he sent me

several roots. They went into the ground in April, one in a protected southwest corner and the others where they are exposed to the northwest wind. Not until June did any life show above ground. Once up, the three in favorable soil thrived mightily. Those in poorer soil never reached a height of more than a foot, but the three in favorable soil reached an average height of fifteen feet by September, growing straight up that distance without branching or the slightest variance from the perpendicular. Neighbor Lane so well described the Vine last February that I will only say its beauty fully justifies his enthusiasm. Next June I will report whether the vines have survived the winter.—*Arthur McCausland, New Jersey.*

The Climbing Hydrangea.—In this Japanese climber, *Hydrangea petiolaris*, we have one of the best vines for use on large wall spaces and also on the trunks of large trees in certain cases where the use of a vine would be permissible. Although introduced to gardens more than forty years ago, it is not so widely known as it deserves to be; for certainly a well established plant when in the glory of full bloom is a most attractive subject and compels admiration. It is perfectly hardy in Massachusetts and seems to grow well in any aspect, although the maximum amount of flower is produced only in the full sun. The main stems cling closely to the support by means of Ivy-like roots, the rate of growth being moderate, though eventually attaining forty or fifty feet in height. In this locality the plant is at its best about the end of June and a fine showing is made by the large, flat clusters of white flowers. These clusters are eight inches or more in diameter with comparatively few sterile flowers, but still sufficient to make them very conspicuous. The foliage is pleasing all through the season and apparently free from the attacks of insect pests, which is not the least of its merits. The photograph shows a flourishing specimen planted more than thirty years ago on the south side of a church.—*H. E. Downer, Northampton, Mass.*

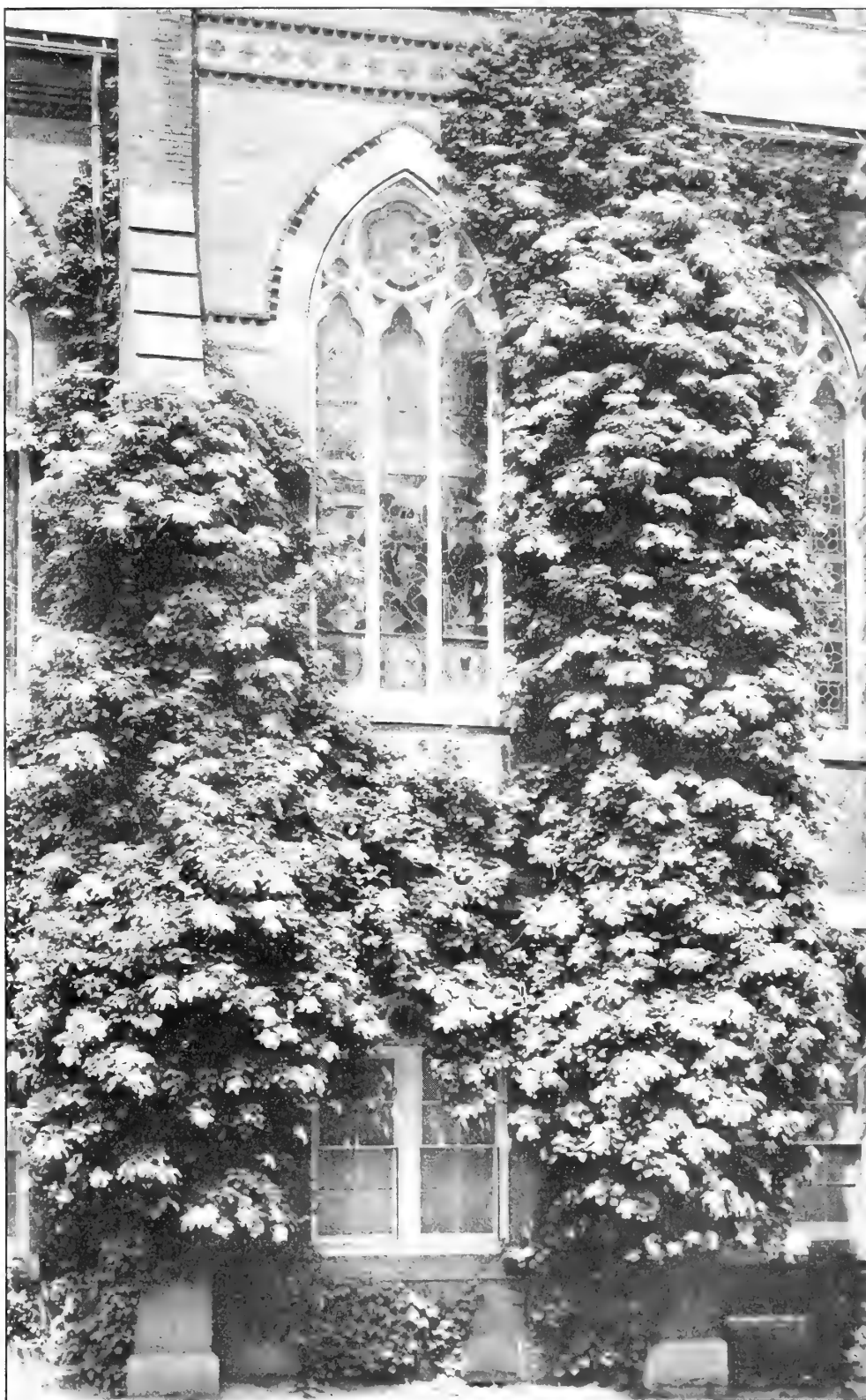
English Material for American Gardens?—If I have a criticism of THE GARDEN MAGAZINE it is this: that often one finds, in the same or consecutive numbers articles on, say, bulb growing or vegetable gardening (intensive), advice of conflicting nature which, to say the least, is somewhat confusing to the amateur who is not always able to sift the wheat from the chaff and consequently in despair "gangs his ain gait" with indifferent results. A suggestion is to obtain and publish accounts and pictures of well known English gardens, with latest English methods as adapted for use on this continent. These would help to fill in during the summer when apparently it is not easy to obtain interesting copy. The advertisements are good and useful, but here again it is not always easy to sift, though I believe one does not go far wrong if one discards those which pretend to offer bargains and relies on those whose prices seem, but are not, high.—*H. L. MacCalbane, Ontario, Can.*

—Gardening is not an "exact science;" only the principles are universal; practice will, nay must, vary with the individual, and therein lies, to a great extent, the alluring charm of gardening. But what may seem to be conflicting advice, may not be so at all on a careful analysis of the *conditions* of the two cases. The beginner will always find some

problems to solve; even the most expert gardener has new experiences from time to time. We try our best to teach the bed rock facts of gardening, applied to American conditions by experience, and we fear that our correspondent's confusion would be worse confounded by filling our pages with foreign articles. The disastrous history of early gardening in America is largely due to the effort to copy English garden material in a climate where it does not fit. The effort was

foredoomed to failure, only the early gardeners did not know it. This generation does.—*Ed.*

Sweet Corn, and "Sweet" Corn.—In THE GARDEN MAGAZINE for last March you published an article "Which Sweet Corn and Why" which, in spite of its many excellencies, I think is somewhat confusing, and may lead many amateurs or beginners to waste another whole season trying to get sweet corn



Is there a more handsome flowering hardy woody vine than the Climbing Hydrangea? (*H. petiolaris*) Self-supporting and attains a height of nearly 50 feet

by planting the white varieties. For the author describes one breed of Crosby as "of very choicest quality;" White Evergreen as "Choicest strain" and Country Gentleman as "Best Flavored of all real table kinds." Two of these are extremely misleading and the description of Country Gentleman is absolutely false. Not any of these are worthy of being classed as "sweet corn," now that Golden Bantam is on the market. The descriptions are still more misleading on account of the faint praise given Golden Bantam and the omission of Black Mexican. The reasons for my writing on this subject are two: First. When I first began planting a home garden several years ago I did not know much about varieties and had to depend on the descriptions. As no real distinction was made between the sweet and the tasteless corn and peas, I wasted a large part of my time, ground and energy, until I had tried and discarded most of the so-called popular sorts. I suppose thousands of people are going through the same experience, and no doubt many of them will give it up in disgust when they find that the stuff they are advised to grow is no better than that raised to sell and selected solely for its appearance, shipping and keeping qualities, and productiveness. Second. I would like to find a better yielding variety than Golden Bantam, but just as

sweet. As I cannot believe the catalogues, or even THE GARDEN MAGAZINE, I have stopped experimenting except with the yellow kinds. I am having a similar trouble with peas, Blue Bantam being the best I have found so far.

Now I solemnly protest that you are not doing your duty by your readers, that you are hindering the development of amateur gardening, that you are discouraging that class of gardeners, and even contributing to the high cost of living when you disseminate such misleading statements as those contained in the article above mentioned. In my opinion all the white kinds of corn that I have tried ought to be put down as "tender field corn" not as "sweet corn."—*Albert E. Fay, Worcester, Mass.*

—It was an error to print after Country Gentleman "Best flavored of all real table kinds." The word "real" should have read "late." Black Mexican is not recommended because it discolors the cooking utensils in a fashion most discouraging to the housewife. The six kinds of *white* sweet corn recommended are the choicest of about twenty distinct sorts and strains available. Since 75 per cent. of all the people in this country still look with suspicion upon all *yellow* corn offered as a sweet corn, it is obvious that an article designed to *serve the country at large* cannot confine itself to Golden Bantam. If Mr. Fay cares to "take a chance" with a pea

that I consider superior to Blue Bantam in both flavor and yielding power, let him try Little Marvel. It is sweeter, though the pods are not as large.—*A. Kruhm.*

—Speaking of yellow corn let us enter a word for Golden Orange as a sweet corn for the home gardener. The ear is larger than Bantam, and the ranks are two more on the cob; it makes a stronger, taller stalk. Sown very early it seems to be less hardy so is not a substitute for first early. Late sowings last year gave us no difference in maturity; but (and herein lies its merit) it has a longer period of quality; moreover it does not "crop" all at once, thus giving a longer season to the patch. At least that is how it behaved last year in our garden.—*L. B.*

Extravagance of Collards.—In the South I had heard so much of the collard I thought I would try it. It grew nicely but had two great faults that made it not profitable as a substitute for cabbage. In the first place, the leaves are loose, and grew and curled up instead of in, so it took up too much space. Three collards took up the same amount of room as five cabbages. The weight, too, had to be considered. It took five collards to equal the weight of one small cabbage. So collards were crossed off my list.—*Emily Halson Rowland, Conn.*

PLAN TO PLANT—THE CALL OF 1918

THE NATIONAL EMERGENCY FOOD GARDEN COMMISSION APPEALS TO THE READERS OF THE GARDEN MAGAZINE

NOW, gardeners of America, comes the call of nineteen-eighteen. To you who were members of that great army of Soldiers of the Soil last year the call is a joyous one for your labor was well done. But this year that army must be doubled. Each of you must enlist at least another to produce "Food F. O. B. The Kitchen Door." The joys of work in the soil none know better than you, and so you must bring with you a recruit for this great work of patriotic planting. Your boys are in the trenches and they must be fed. You do not have to be a soldier to shoot; for the home grown ammunition, making a barricade against General Hunger, is just as important as the aim of the man who directs the firing of the "seventy-fives." The staggering load the god of war demands we carry in the shape of a food problem is best told in the figures that estimate the number of men under arms. That number is thirty-eight million. The estimated cost of feeding a soldier has been placed at forty cents a day. Reduced to money that means that the daily food bill of the soldiers of the world now at war is \$15,200,000 a day.

These men have suddenly been withdrawn from the economic scheme of things and have become non-producers. This puts the burden upon each of us to produce more food than ever before. The Kaiser, we are told, has every inch of available ground under cultivation, and every prisoner able to walk is at work tilling the soil. The enemy realizes what the food question means. Are we to sit by and see the boys we have sent to the trenches fail for the lack of food? If they do fail it will be for but one reason—for the American soldier will die fighting and in the name of Humanity let us not let him die starving.

To the work of the war gardener last year careful estimates credit food valued at \$350,000,000. The importance of this is best shown in the tremendous food bill of the armies of the world which I have just cited. But there is another great reason for increased war garden production. There has been a tremendous rush to our cities because of the call of war work. Housing problems confront every municipality as they never have before. City councils and chambers of commerce are taking up means of solution everywhere. On one page we read of suggestions to relieve crowded conditions and on the very next page we read suggestions for enforcing farm labor. Everywhere the farmer is calling for help. There can be but one result of this rush to the cities and that is increased cost of living. Right here the gardener is destined to play a great part in this war. It is for him to produce close to the point of consumption and thereby save not only handling charges but relieve railroads of as much of the transportation burden as possible.

As never before the thought of the people has been turned back to the soil and to the value of land. Mother Earth is kind, as you gardeners know, and she will continue to be kind to us as long as we do not desert her and forget her in this mad rush to the cities in an endeavor to gain war wealth in dollars. Those dollars will avail you nothing without proper food and health which go hand in hand and can only be obtained from the soil. The hand of Hunger must never grip this land and it never will as long as the gardener, that Soldier of the Soil, enlists as he has enlisted in the past to "do his bit" for Liberty and his Country.

Washington, D. C.

CHARLES LATHROP PACK,
PRESIDENT OF THE COMMISSION

THE MONTH'S REMINDER, JANUARY 1918

*Bare Twigs are laced against the moonlight sky;
Yon icicle on the eaves gleams like a knife,
But from the hearth the crackling flames leap high,
And here my paper garden sits to life!*

THE purpose of the *Reminder* is to call to your attention the things which should be thought about or done during the next few weeks. For full details as to how to do the different things suggested, see the current or back issues of THE GARDEN MAGAZINE. (An index of contents is prepared for each completed volume, and is sent gratis on request. The Readers' Service Department will also cite references on any special topic if asked—that's its job.) To get the full benefit of this department, check off with a pencil, ✓ in the square provided for that purpose before each paragraph, the items that apply to your own case, and use the page as a reference list.

ONLY a foolish or an inexperienced gardener considers January a "nothing-to-do" month. January should be the time of preparation for the entire year's garden campaign. Every move, change, and new undertaking is to be planned in detail. Supplies and materials of all kinds should be studied up and ordered.

Above all—start this month a garden record or diary in which to keep track from time to time of all your garden activities. There is no necessity for such a diary to be "written up" every day. But vegetable and flower planting dates; variety names of hardy perennials and shrubs, Roses, etc.; seasons of bloom; dates of killing frosts; and many other things will be of inestimable value to you in improving your garden work of all kinds from year to year. And now to this month's work!

The Vegetable Garden

□ Choose the situation for and determine the size of your garden. If ground is frozen, mark out with stones. Get accurate measurements. "Go easy" if this is first experience—resist temptation to attempt too much.

□ Plan your garden. Work out all details. Put them down on "made-to-measure" plans. It is much easier to do it now than when you are ready to plant—saves time, seeds and disappointment!

□ Order your seeds *early!* This year's seed stock is lowest in many years. Seedsmen have to be governed by old rule "First come—first served." Be among the first! Get the varieties you want, and have your seeds on time.

□ Order your fertilizer early. Prices are high but—*use a full supply!* Vegetables are high too. Don't risk having poor crops this year.

□ Overhaul, repair and paint tools. Don't just *think* about this—do it! Nine garden tools out of ten are worn out by neglect, not use. Make yours the tenth. A worn out, dull and rusty tool is a tremendous handicap.

□ Order new tools now. Deliveries will be slow—transportation slower. Don't take chances. Tools have gone up in price, but not as much as labor and vegetables—money spent in good tools will be a better investment than ever before.

□ Begin to get your supply of manure. Thoroughly rotted, short, fine, fairly dry. You can't have too much. A good manure pile is advance guarantee of a successful garden—the best there is.

Do you keep a pig? No joking! If you have room to fix him a 3 x 6 "place in the sun" where he can tramp and root your manure between times, he makes a mighty good investment—increases the value of the manure and turns all waste food from table into real money.

The Flower Garden

Not much doing here, but—

Scout around and see that the mulching on hardy border, Rose bed, hardy bulb bed and so forth is in good shape. Sometimes our De-

ember winds loosen or blow it off before snows have had a chance to settle it. Watch for mice in mulching on Rose beds and bulbs or where leaves have collected around shrubs. Use traps; and remove and replace if necessary.

□ Make definite plans for any new flower gardens or re-arranging old ones. The hardy perennials may be moved easily *early in the spring*. If they have been in several years, a shift will do them good.

□ Order hardy perennials now for delivery as soon as your ground is ready in the spring. You may lose a season's bloom by having them come late.

□ Include bone for your flowers along with your fertilizer order: "inch-bone" or "knuckle bone" for lasting results in making up new beds, bone meal for top soil and for top dressing to rake in in the spring. Bone is great stuff for blooms!

The Greenhouse

Business enough here—first active work for the new year!

□ Get everything in readiness for the under-glass drive that begins next month—first move in your 1918 garden operations. Get all your accessories in shape. Make new flats—two inches deep for starting seeds, three for transplanting. Wash all empty pots. Soak for forty-eight hours, scrub with fine sand and stiff brush—cleans out the pores so air can get to the roots. Make a seed board and planting stick to help in putting in seeds. Get a fine "rose spray" for your watering can for watering seedlings, its bad business to wash them down with a heavy spray.

□ Prepare soil for starting seeds—fresh loam (better if baked or steamed to kill weed seeds), one part; humus, or sifted leaf mould, two parts. Add sand "to cut" if necessary.

□ Prepare soil in advance for potting and transplanting plants. Good clean garden mould, with humus or leaf-mould enough to make light and spongy; add a pint or so of bone meal or bone flour to the bushel, thoroughly mixed through. This should stand for several weeks before using, so that the bone will be immediately available to plants when used.

□ Test all old seeds. Place between thick pieces of blotting paper, constantly kept moist; or, better, start in soil under same conditions that you expect to have in starting seeds next month.

□ Start stock plants from which to get cuttings. Geraniums, Heliotropes, Paris Daisies, Begonias, Coleus, and other stock plants which have been carried through should now be started into active growth and pruned back quite severely so as to give a good supply of cuttings next month.

□ Start vegetables for forcing under glass. Cucumbers, tomatoes and melons (all "warm blooded" plants), are good to follow winter crops of lettuce, radish and so forth as the days get longer and there is more sun heat. To save time, start them in advance in pots, to set in beds or benches as soon as space is available. Use thoroughly well rotted manure and light soil, half and half. Paper pots

are easier to care for than clay pots—don't dry out so often, and give the roots more room.

□ Start cauliflower now for growing in frames or in greenhouse. Put seedlings in individual pots as soon as large enough to handle.

Keep blooming plants well fed—fine bone, liquid manure or liquid nitrate of soda, a tablespoonful to a watering pot—will all help to keep late blooms up to full size.

Keep up cultivation. Both flower and vegetables require air in the soil, as well as moisture and warmth to make good growth. Never let a crust form.

□ Divide or bench Ferns now for new plants. The new season of growth begins about this time. Old plants cut up and re-potted will make shapely, new plants by next fall. Old plants which increase by "runners" set in the bench now will furnish a new supply of plants in this way. It will save time to root new runners directly in pots plunged in soil. After rooting, just cut off runner and you have new plants all potted up!

□ This is also time for Azaleas to make a natural start. Buy or bring in a few plants—start slowly in cool temperature.

□ Start another crop of Sweet Peas now. You do not want to be without these beautiful flowers during the spring months. Put in a row or two (where they will have plenty of head room) of the "Christmas flowering" or "greenhouse" types.

Keep plants in general healthy. Days are short and cold but some fresh air should be given practically every day—early in morning while sun is bright, and the temperature of the house is on the *increase*.

Fumigate regularly. Don't wait for bugs to appear. A few cents worth of aphine or Blackleaf 40 and a few minutes' time, once every week will keep the house clean. This is especially important now, because of crowded conditions bound to exist during February and March.

The Frames

□ Next month will be hot-bed time—but *now* is the time to get manure for heating or enriching soil. Preparation must begin the three weeks or so before time to sow seed. Manure must be composted, bed made, and allowed to cool down before it is safe to plant. Get busy!

If you are running any frames through winter, remove snow from sash as soon as possible over *growing* plants. Snow over dormant plants that are being "wintered over" is a good thing—keeps out both extreme cold and bright sunshine, equalizing conditions in frame.

Be careful to keep all drains and gutters *outside* of frames clear and free from surplus snow. A sudden thaw may soak or even flood soil in frames with bad results.

□ Repair sash and frames now. They will not be needed until next month, but then you will have your hands full with other things. It is a slow job which should be carefully and thoroughly done. If left till later will be

slighted, and loose glass will mean breakage and frozen plants. Do it now and do it right. A coat of paint is good insurance.

Give ventilation frequently, even if temperature inside does not make this necessary. Fresh air is important to health of plants—and it discourages diseases and bugs.

Small Fruits

It is not too late to mulch strawberry bed if you haven't yet done so. It protects against spring "heaving," and plants from starting into growth too early.

□ Were your cane fruits, raspberries, blackberries and so forth gone over to remove all canes that had fruited at the last bearing season? If not, do the work now. Cut *old* canes back to ground. Cut back long tops of new growth likely to thrash about in wind. Go over currants and gooseberries in careful search for any wood that may be attacked by borers—affected shoots are light colored and wrinkled and shriveled, instead of sound and plump.

□ Prune currants and gooseberries if not done last fall—will save valuable time next spring. From currants cut out some new growth and the oldest growth to leave good shapely, open bush. Don't be afraid of over-pruning. Leave wood two to four years old, as this bears best. Gooseberries especially need to be kept in wide open form to allow free circulation of air in summer to protect against the "mildew," the great gooseberry trouble. Long branches, reaching over to the

ground should also be cut back. Mildew is likely to get a start on leaves resting on soil or grass.

□ Prune grape vines as early as possible. They are one of the first things to start in the spring, and the flow of sap is so great that injury or even death may result from "bleeding" if work is done too late. Ninety-nine per cent. of grapes are not pruned enough. Cut back last year's lateral growths to two or three buds—even if you remove more than half of total wood, no matter.

Espaliers and fruits trained against walls need protection from winter sun—arrange a screen of evergreen boughs, corn stalks, or something similar to the *south* of them, if they are in a sheltered, sunny position. Mulch about roots also, to prevent growth starting up prematurely in the spring. This should be done now, while ground is frozen hard.

The Orchard

Watch the young trees carefully, to see that they are not being injured from rabbits or other rodents, when the heavy snows keep them from getting at their other sources of food. A heavy tarred paper tied around trees will protect them.

□ Don't put off your pruning! Good resolutions won't produce good fruit. Spare the knife and spoil the pippin—or Winesap, or Mackintosh, or whatever it may be! Remove first, all broken or diseased wood, second, surplus growth or crossing or rubbing limbs;

third, branches or parts of branches interfering with the general shape or development of the tree. Make all cuts clean and neat—remember that a bruised, broken end will not heal quickly, and invites disease. Remember that the "bud" nearest the cut you make will be the one to make most rapid new growth, and in the direction that the bud points. Choose the point for cutting accordingly. Don't leave a long stub above the cut, nor cut close enough to weaken the bud.

□ Don't neglect winter spraying. This is absolutely essential to have good fruit. Strong sprays can be used now, while trees are dormant. Work must be done thoroughly to be effective. It is best to go over trees twice. On quiet days, if possible, to be absolutely certain of covering every square inch with the spray.

It will pay to "scrape" old rough barked apple or pear trees before spraying. Regular tree scrapers cost thirty-five or fifty cents. The back of a draw-shave, old carving knife, or any stiff piece of metal will do for a few trees.

When pruning, also, clean out old wounds and cavities, rotten wood and so forth—these can be treated and filled later but cleaning them out now will destroy insect eggs or disease germs harboring there, and save time in spring. Bad cases need expert operators.

□ Have a sanitary orchard—all prunings, trimmings, and old fruits, rake up clean and burn. Don't leave possible sources of infection to plague you next season.

The Beginner's Garden W. C. McCOLLOM

(Supplemented by the pictures on facing page)

CHATTING ABOUT SOME OF THE FIRST PRINCIPLES "THAT EVERYBODY KNOWS" AND WHICH ARE USUALLY TAKEN FOR GRANTED

WHY do so many gardens begun with good intentions in spring, wind up in disappointment in midsummer? Good money is spent—unstintingly for seeds of Jones Giant Tomato and Smith's Everbearing Bean. Everyone is saturated with the "garden spirit," new implements are purchased—a clever salesman, could, I believe even (at this season) sell a contraption guaranteed to keep the flies brushed off the plants; but in August, that same salesman couldn't sell a bucket of water to the owner of an impoverished garden. Is it lack of knowledge or lack of interest that causes the trouble?

THE truth is that too many people get a wrong start and in consequence are discouraged before they can see the light and so steer out of the sea of trouble. Now then; how goes it with you? More vegetables than you can possibly use in early summer followed by a positive famine? That is a common fault from the time honored practice of starting the entire garden at one time, calmly assuming that the "early," "intermediate" and "late" peas will mature true to form without regard to weather or to sort and give a perfect succession from June until frost. But that was last year, and last year's gone. There is time now to get things in order for a proper start this year, time to plan so as to have gardens full of quality

vegetables at all seasons and all through them, too.

NO ELEVENTH hour inspiration ever made a really good garden; good gardens are planned with care, the crops are allotted with an understanding of their individual requirements—quick maturing crops so arranged that they can be succeeded by others, and so on. The whole atmosphere of a really thought out garden is one of business-like calculation applied to gardening, and it is only as they receive thought and study in advance that gardens will be successful.

Have you ever studied garden strategy, laying out your garden with care and thought, the same way that a General arranges his fighting forces? We are all prone to think ourselves Pershings and Haigs; yet in the garden, our only place to operate, we can get our artillery in front of our infantry and our machine guns in the rear! Introduce a little of this kind of skill into your gardens; it is interesting and constructive garden work and will pay dividends this summer.

MAKE a sketch of your garden to scale, make it large enough so you can have movable cutouts to represent the different crops, which will assist wonderfully in arrangement—other articles in THE GARDEN MAGAZINE give the distances apart required for these crops you grow. But bear in mind

this: crops that are to remain in the ground all summer should be kept to one side of the garden, this is plain practical sense; the balance of the space can be used as a plotting field for you to exercise your strategy.

What "Exposure" Means

THE "ideal setting for a garden" as the books always begin is a clear landscape to the south. That is because the sun shines from that direction. If possible trees growing on the south side should be removed; and it is better if the east and west side are clear of tall trees. The only trees that actually belong in the "production garden" are fruit trees and they should be on the north side—unless, of course, they are dwarfs, in which case they may be set out for effect as their roots are small and the tops are not serious shade producers. All cane fruits can be arranged in an orderly manner around the sides of the garden rather than in rows that cut up the garden area into small plots. Where possible let the rows run north and south to equalize the light; but if this can't be done use a little judgment in planning so that the tall or shade producing crops are confined to the north side of the garden.

Two "Practical" Groups

IN ORDER to simplify our planning we consider the vegetable crops in two classes: (1) those that are sown but once during the



Burn out insect nests in trees, using a flaming torch on the end of a convenient rod



When snow hangs on the evergreens rake it off to prevent breakage of the branches



Save time by pruning back any fruit trees or dwarfs that need control



A wire brush is by far the best tool for cleaning up tree trunks; better than scraping

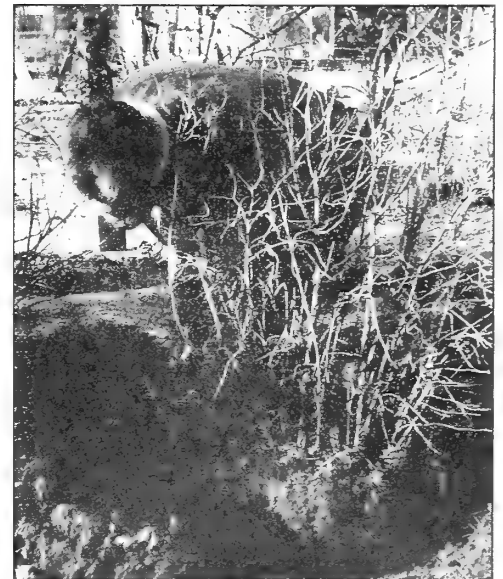
Garden "Movies" No. 1

A PAGE OF PICTURE HINTS OF WORK
TO BE DONE AND THE TOOLS
TO USE DURING JANUARY

(Photograph by W. C. McCollom)



Making hay before the sun shines! *i. e.* getting acquainted with the new catalogues and sending in orders early. Most important this year



Transplant shrubs while dormant, and moreover the ball will hold firmly now. Don't move without a ball



After the ground is frozen put the mulch on the herbaceous border—to keep it cold remember; warmth is likely to cause rotting



Use some of your spare time to cut out old wood of small-fruit bushes. Use a pruning shears and cut quite low down

season; (2) those that mature quickly and are renewed from time to time. The times of sowing the various vegetables will be discussed elsewhere and in subsequent issues; our present purpose being to consider them only in reference to the plan.

Crops sown or planted but once are: Jerusalem artichoke, French Globe artichoke, lima beans, running pole beans, bush limas, brussels sprouts, cardoon, celeriac, chard, chicory, egg plant, various herbs, kale, leek, muskmelon, watermelon, okra, onions (seeds and sets), oyster plant, parsley, parsnip, pepper, potatoes (early and late), celery (early and late), pumpkin, squash, rutabagas, New Zealand spinach, squash, sweet potatoes, tomatoes.

Crops that require more than one sowing are: bush beans (wax and green), beets, carrots, chervil, cress, cucumbers, corn, endive, kohlrabi, lettuce, peas, radish, broad leaved spinach and turnip. A sub-division of this class would be cabbage and cauliflower which are handled as "companion crops" and two distinct sowings are made—one in early spring in the hotbed or greenhouse, and one in early summer for maturing in fall.

Selection of Types

IF YOU suppose that all *varieties* of the different vegetables are alike in their requirements or behavior you are mistaken. There is as much difference in the flavor, growth and productive value of different varieties as there is between two different breeds of cattle. We should know something of these differences if we are to order our seeds with any degree of intelligence. For instance, if you want quantities of beans at the minimum of effort—regardless of any other factors—plant the running pole types, such as McCaslan or Kentucky Wonder. They are of reasonably good quality *if picked when small*. Real quality in beans, however, is found in the pole lima, it will also certainly out-yield the bush type since the pods are longer and contain more beans; but—and here's the point—some folks can't get poles, and must resort to the bush lima. The dwarf green beans are undoubtedly the easiest to grow and yielding wonderful fall garden crops. The wax podded type of the dwarf bush bean is on a parity with the green bean except in color—but some few people prefer the yellow pod. Shell beans such as the white marrow or kidney, are also of the dwarf type. Here are different types of beans—which one do you need?

The Variety a Personal Matter

WITH many vegetables it is simply a matter of selecting varieties that are good yielding and of a quality that measures up to your personal standards; there being little, if any, difference in the treatment of different varieties. Some may mature a few days earlier than others, some are a little better in flavor, others may yield more heavily or are not so susceptible to natural weaknesses of their family. But from a planning viewpoint it makes little difference whether you grow "Crosby's" or "Electric" beets or "Rocky Ford" or "Emerald Gem" melon. Groups of this class are beets, carrots, corn, cucumber, egg plant, kohlrabi, leek, muskmelon, okra, parsnip, ruta бага, chard, and turnip.

Pumpkins and squash are of two distinct types, although both are sown at one and the same time, viz.: (1) early maturing suitable for summer use, (2) the hard skinned sorts that

are grown only when wanted for winter as they are better keepers.

Potatoes offer early and late varieties; the late types keeping better (not getting past so early in winter as the early varieties.)

Onions are started from seeds or sets, "What's the difference?" The sets or young bulbs mature much earlier, thus giving onions from your garden long before the seedlings will be ready—but bulbs grown from seed, however, keep better. Therefore, plant just enough sets to give a supply of early onions and for the main crop start from seed.

Tomatoes differ somewhat in type: there are numerous small fruited varieties that can be used in salads, etc. They are wonderful producers, and, obviously, only a very few plants of this type need be set out. Your "profits" will accrue from the large fruiting type. The same is to be said of peppers: there are several of the small pickling "hot" peppers of which one or two plants will suffice, the main crop to consist of the larger types, which have many uses in the home.

There are two distinct types of "spinach": New Zealand spinach (only so-called, for in fact it is not a spinach at all) is started from seed and will grow vigorously throughout the whole summer, and can be cut several times all the year; the other type or common garden (true) spinach starts early in the season, matures quickly and is soon gone by. It is only useful in spring and fall as it will not stand the hot weather and will run to seed before it can be cut.

Peas are companion crops to the common broad-leaved spinach. Successful gardeners always sow a row of peas when they sow spinach. The differences in peas are between the dwarf and tall plants and the round and wrinkled seeds or grains. How to use them? Plant tall peas wherever possible as they are better yielders, and it is easy to rig up some means of supporting them, and remember the wrinkled seeded peas are the only ones worth growing in home gardens, because of their *quality* and ease in shelling. The round seeded peas are good yielders; are more hardy and are, therefore, oftentimes used for first sowings, but if you want quality plant only wrinkled varieties. Radishes are also sown with the peas and spinach as they are also a spring and fall crop. They are successfully grown in summer only when well irrigated and partially shaded.

Lettuce is to be considered in four groups. Use the large head type for spring and fall sowings. These varieties are unquestionably the best in quality. For summer sowing in the garden use small head types because of their heat resisting qualities—not running to seed as quickly as the large head type. The curled or non-heading type is also available for summer and even though those varieties lack some of the essentials of tip top quality they are the best for summer, even excelling the small head types. Romaine is like a large type of lettuce, satisfactory for spring and fall but will run to seed in summer if not kept well watered and partially shaded.

Of celery we can have "early" or "late": now this does not mean that the one actually matures ahead of the other. The distinction is based on character of growth—the "early" varieties will bleach during summer, whereas the "late" varieties will not bleach until the weather gets cool. For home gardens needing only a small supply an early variety can be grown exclusively as it will keep in winter just the same as the winter or late varieties, and serves two purposes.

Productive Power

SOME of our little home gardens use enough seed to start a small farm. This is wrong! It is wasteful; and oftentimes causes crowding which leads to other troubles. We should know to some extent the productive power of our seeds. An ounce of hard leaved spinach seed won't go very far but an ounce of New Zealand spinach seed would be enough for a truck farm! If we set out 50 heads of cabbage and give them a little attention we are almost sure to gather 50 heads; if we set out 50 seeds of corn we should gather about 100 ears as the crop; a 50 foot row of spinach should give six cuttings for a family of six; a 50 foot row of peas should give 12 pickings for a family of six; whereas a half dozen egg plants would give a family of six, that was really fond of that vegetable, all the egg fruit they could possibly use. These are points to study in making our plan. It is a false economy to be meagre with seeds, but there is a happy medium between meanness and waste.

How Much Seed Needed?

CABBAGE, cauliflower, Brussels sprouts, and kale are usually sown in a seed bed and transplanted so there is little waste and one ounce of seed should produce 3,000 plants. Celery which is handled in the same manner should produce 5,000 plants from one ounce of seed.

Garden crops that are sown in rows and thinned out to the required distance are best seeded moderately thick to assure a good stand. One ounce of seed will sow 100 feet of drill of the following: carrots, chicory, onions, leek, radish, turnip, ruta бага. For beets and chard two ounces of seed are needed for 100 feet of drill; while parsnip, parsley and celeriac will only require one half ounce.

Peas, bush beans, bush limas, spinach and onion sets are not thinned; they are sown or planted in the rows in the proper quantities to allow for maturity of the plants; one quart of peas, one quart of onion sets, and one ounce of spinach for 100 feet of drill; whereas one pint of bush or lima beans will sow the same distance of row.

Garden crops sown in hills, should be well seeded to safeguard against any blanks. It is an easy matter to thin but hard to replace. One ounce of pumpkin or squash will sow 25 hills; one ounce of cucumber, muskmelon or watermelon will be sufficient for 50 hills, one pint of pole limas or other pole beans will sow 50 hills and one pint of corn will be enough for 100 hills.

Lettuce and endive are usually sown in the seed bed and then transplanted, one ounce of seed will produce 5,000 plants. Potatoes are planted at the rate of one peck of seed to 100 hills or about three barrels per acre [but next month THE GARDEN MAGAZINE will tell how to reduce this considerably by using skins or eyes].

Advance Planning

ANIMAL manure is almost indispensable for the vegetable garden and our present plans must consider the supply for the year. Stable manure improves with age, so get it now, and by "turning" several times it will be improved ten fold. A garden 50 x 50 should have at least two loads and three would be better, fertilizers will be required later in the season and should be ordered now.

THE PATRIOTIC GARDEN

FOOD F-O-B THE

He also Fights who

EAT · FRUIT · AND · SAVE · SUGAR

KITCHEN DOOR

helps a Fighter Fight

H-HOOVER

EAT · NUTS · AND · SAVE · FAT

Making the Smallest Quantity Reach the Farthest

GRACE TABOR

METHODS OF SCIENTIFIC INDUSTRIAL MANAGEMENT APPLIED TO THE VEGETABLE GARDEN

Mr. P. S. Ridsdale, Secretary of the National Emergency Food Garden Commission, writes: "Let me compliment you on your feature for food gardens. This kind of instruction is what so many people sorely need. Many made a great mistake this year (1917) in planting too many seeds in too small an area. It is essential that people be taught next year how much (or how little) it is possible to plant in certain prescribed areas."

[EDITOR'S NOTE.—An experimental garden was conducted all last year by Miss Tabor with the object of ascertaining just how modern scientific methods could be effectively introduced into the Patriotic Garden. She has worked out for us to a nicety the essential problems of efficiency in space, succession, and quantities of food crops for any definite number of persons without any excess going to waste; and succession charts, plans, and all data for working any sized garden are given in this article.]

IN EVERY household there is a demand that is quite as definite as the demand of world commerce, if we choose to make it so, or rather, if we choose to believe that it is so, and set about ascertaining what it may be. Commonly the gardener is prodigal of material—he plants too much of what he does plant; and he fails certainly to organize; that is, he fails to study his problem, and reduce it to its lowest factors.

Demand should regulate supply, invariably—in gardening. It, therefore, behooves the home gardener to determine to a nicety how much he needs to raise of each thing he proposes planting in order to supply his market. If he raises more than enough, it means that he buys just that much more seed than he need to, and works more land than he need work; therefore, putting in more time than he should. And he has to put in still more time harvesting the excess thus derived, unless he allows it to waste. Actually he simply increases his cost of production—his overhead—to no advantage whatsoever.

LABOR should yield certain returns. It should produce the maximum in result from the minimum in effort; and neither effort nor result can be considered independently, because they are each the standard by which the other is judged. Careful observation has established the fact that only when labor is accomplished with ease and comfort by the laborer is it possible to maintain the highest standard in results over a lengthened period. This high standard, so greatly desired, is being obtained in many industrial plants by a careful study of all conditions and factors having to do with the work, and there has been given to this new science the name of "scientific industrial management."

When the war garden became the great and immediate necessity of last spring, I determined to make use of "scientific management" in planting and tending a garden in order to find out if it would not only increase our garden output when increased production was so vital, but also, at the same time show us an easier way to work. It did both!

ONE YEAR'S VEGETABLE RATIONS FOR FAMILY OF FOUR ADULTS, BY WHICH THE PLANTING OF THE EXPERIMENTAL GARDEN WAS PROPORTIONED

SUMMER—127 DAYS		
VEGETABLE	NO. ROWS	SERVINGS
*Peas	7	14
Beets	2	10
Cabbage	15 heads	15
Corn	8	40
Turnips	1	5
Carrots	2	10
*Kohlrabi	1	4
*Eggplant	1	25
*Cauliflower	15 heads	15
Tomatoes	3	Indefinite
Okra	2	15
Sorrel	3	20
Beans	1	50
Lima beans	3	15
*Squash (crookneck)	4 hills	36
*Peppers	1	25

Total number of servings grown 299
Required total (no. of days) 127

Surplus of summer vegetables (to be canned or dried) 172

WINTER—238 DAYS		
VEGETABLE	NO. ROWS	SERVINGS
Beets	2	10
Parsnips	3	15
Salsify	4	20
Carrots	2	10
Cabbage	9 heads	9
Rutabagas	1	18
Winter Squash	2 hills	10
Onions	4	40

Total number of servings grown 132
Required total (no. of days) 238

Deficit of winter vegetables 106

Hence there must be on hand for winter, in addition to the above winter vegetables, the following canned or dried, from summer's surplus:—

Corn	25 cans	for	25 servings
String beans	25 "	"	25 "
Greens (beet tops, etc.)	12 "	"	12 "
Okra (dried)	250 pods	"	10 "
Tomatoes	24 cans	"	24 "
Lima beans (dried)	10 pints	"	10 "

Or a total of 106 servings

The summer's surplus shown above provides about half as much more, which allows a fair margin for extra service.

The space given over to potatoes allows 402 hills; at a fair yield a hill a day, or 365 hills in all, should be enough for a family of four. This allotment of ground therefore may be considered sufficient, when the proper conditions of soil have been secured.

Add $\frac{1}{2}$ of the above amounts for each additional member of a family.

*Not considered for canning (see text.)

LET us consider the backyard vegetable garden, for a moment—the most lamentably wasteful bit of earth on earth, as usually conducted. String beans by the bushel, when you can't give away quarts. Lettuce daily—cabbage-head size—when half a head furnishes enough for the family, and all the neighbors have their own. Green corn by the score ears—just at the time the beans are most abundant and the beets need thinning (and eating) and the okra is demanding to be cut.

This is the way it goes, until the gardener is quite out of his mind with the worry of it; and like as not sits down and gives up in despair, letting everything go to seed or to waste—which is usually one and the same. Very few had arrived at the stage of drying their own beans and corn and okra, up to last summer. And in addition to the surfeit there is usually the famine—the lack of certain worthy vegetables that have either been crowded out, or else have not been planted in sufficient abundance to meet the needs of the household.

SO IN the last analysis, it is not how much we raise but how much we use, that is important; and instead of being smart we are simply stupid when we overdo. It is nothing to boast of that we had "such a world of tomatoes!" if a world of tomatoes was more than we needed, more than we could use. Rather is it something to be ashamed of, for it reveals poor management. Prodigality again; prodigality everywhere!—our besetting sin. It is this assertion, taken as a warning, that sounded the key-note of the war garden that is the subject of this article.

The "clearly defined ideal" was "just enough, and no more!" Determining what would be just enough meant, of course, ascertaining what the year's market would be, first of all. In other words, what would the family which this garden was to be "tried out" on, eat during the year—finishing up with next to nothing left over when the garden products of next year begin to be available? So many bushels of potatoes, so many measures of beets, and of carrots and parsnips and so on, through the list, could be roughly guessed

at of course; but this seemed altogether too vague, too much the old hit-or-miss way. There must be something more definite than this, or it would not deserve to be called scientific management.

Obviously it must be brought down to the individual, in order to be exact enough to meet this test, and to form a basis of operations. How many potatoes will an individual eat, during the year? How many beets? And carrots? And parsnips?—and so on. Sounds almost absurd, at first, does it not? But actually it is simply a problem in rationing which, when solved, is to be coupled up to the gardening planning problem, and there you are!

So thus it was all planned, root crops and top crops, with pages of figures set down before quantities were finally determined.

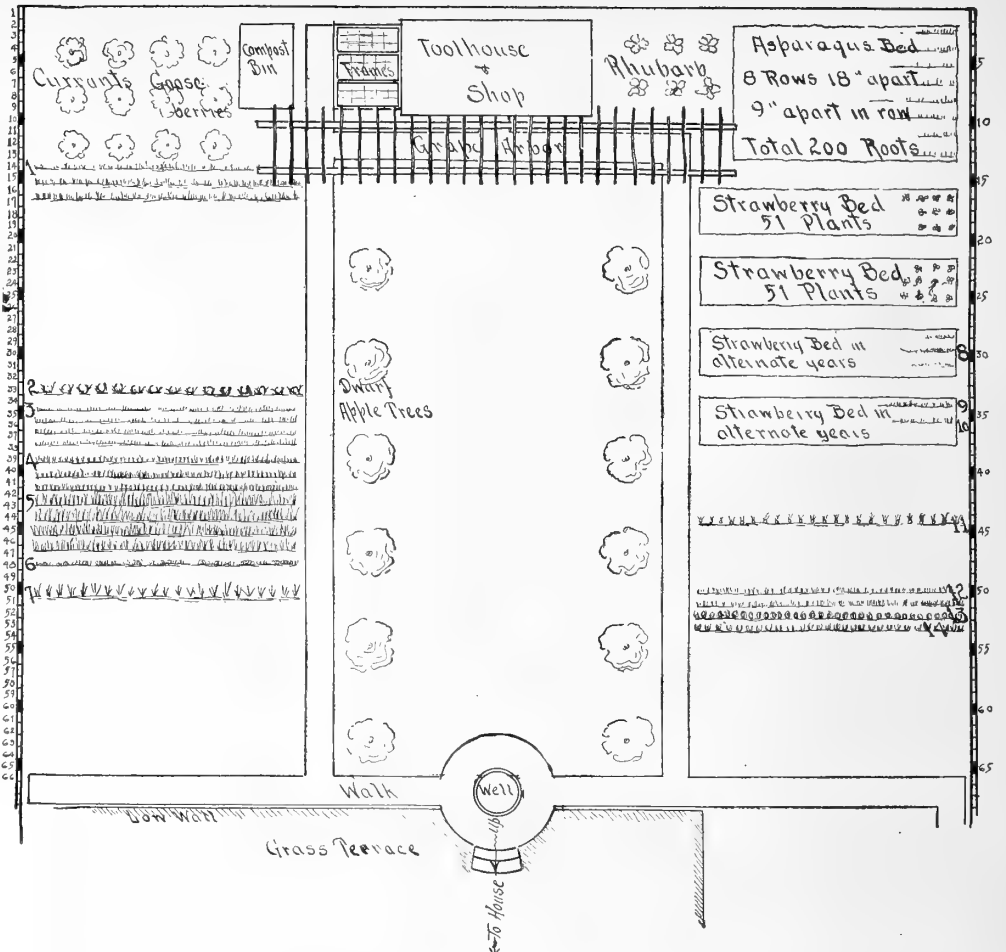
It is yet too soon to say, with certainty, whether the potatoes which the garden in question yielded will suffice for the family of four who make up the "trial squad;" probably they will not, quite. The yield was fair, though not as good as it might have been if the soil had not been over-enriched with stable manure, applied with mistaken zeal during the summer previous. Many of the plants ran largely to top, under the stimulus of it. A total of about 8 bushels of excellent quality, promises to carry until April first or thereabouts. This verifies the estimate of half a pound per person daily; otherwise, an average of two good sized potatoes.

THE analysis at length developed that a row of beets 24 feet long—the length of the side rows in this garden was 24 feet, from which we must make an allowance of perhaps 18 to 24 inches, for waste at the ends—would yield 48 roots, less this waste, which we may say reduces the number to 45. Similarly, carrots, turnips and parsnips would yield 45 roots per row; salsify, thinned to 4 inches apart in the row, half as many more, or about 65 roots; onions thinned to 2 inches apart, about 135 to the row; cabbages planted 18 inches apart—as early plants may be—just 15 heads, which is an ample number for summer, unless one is inordinately fond of cabbage.

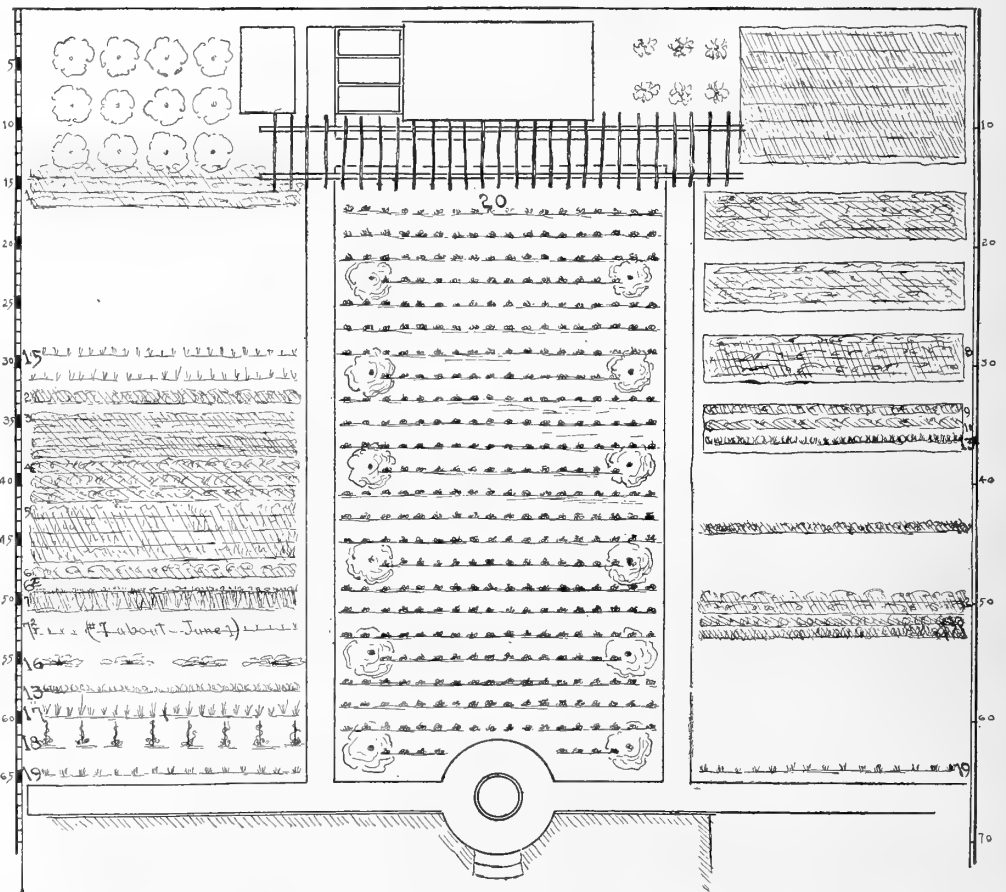
A bunch of beets in market is ordinarily four or five; hence, a single row gave 10 bunches; otherwise, five servings. Each row of the other root vegetables was apportioned in the same way, excepting the rutabagas and the salsify. Of the former, a pair are enough to serve at a meal; and of the latter, a bunch of perhaps ten or a dozen is needed.

It would take too much space to elaborate upon the figures by which the supply of each vegetable was determined; so the result in tabulated form alone is given. This, as will be seen, is based upon a division of the year into producing months and non-producing months. Of the former, there are approximately 4½—more accurately perhaps, there are 18 weeks during which each day's supply may be taken fresh from the garden. This leaves 34 weeks to be provided for, either with the surplus, canned, dried or in some way preserved, or with the strictly winter vegetables—the root crops, cabbage and winter squash.

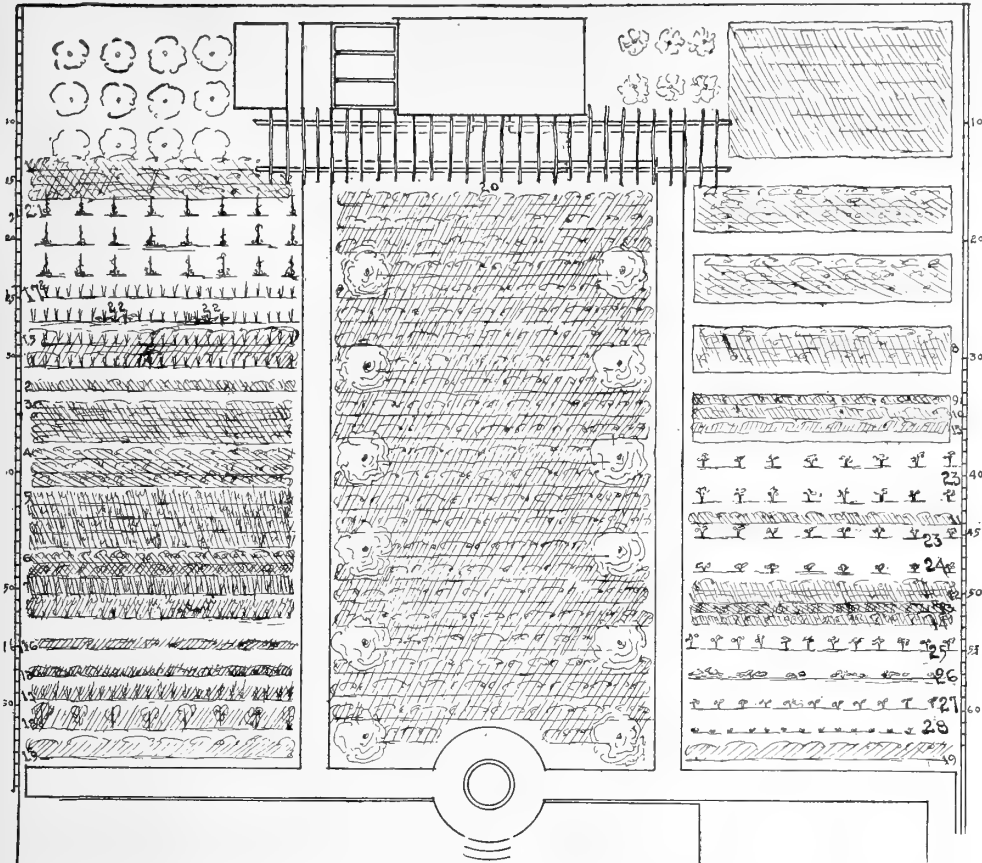
THE 34 weeks or 238 days of winter have eight strictly winter vegetables and six canned or preserved to be divided between them; that is, there must be enough of the fourteen to serve 17 times each, or



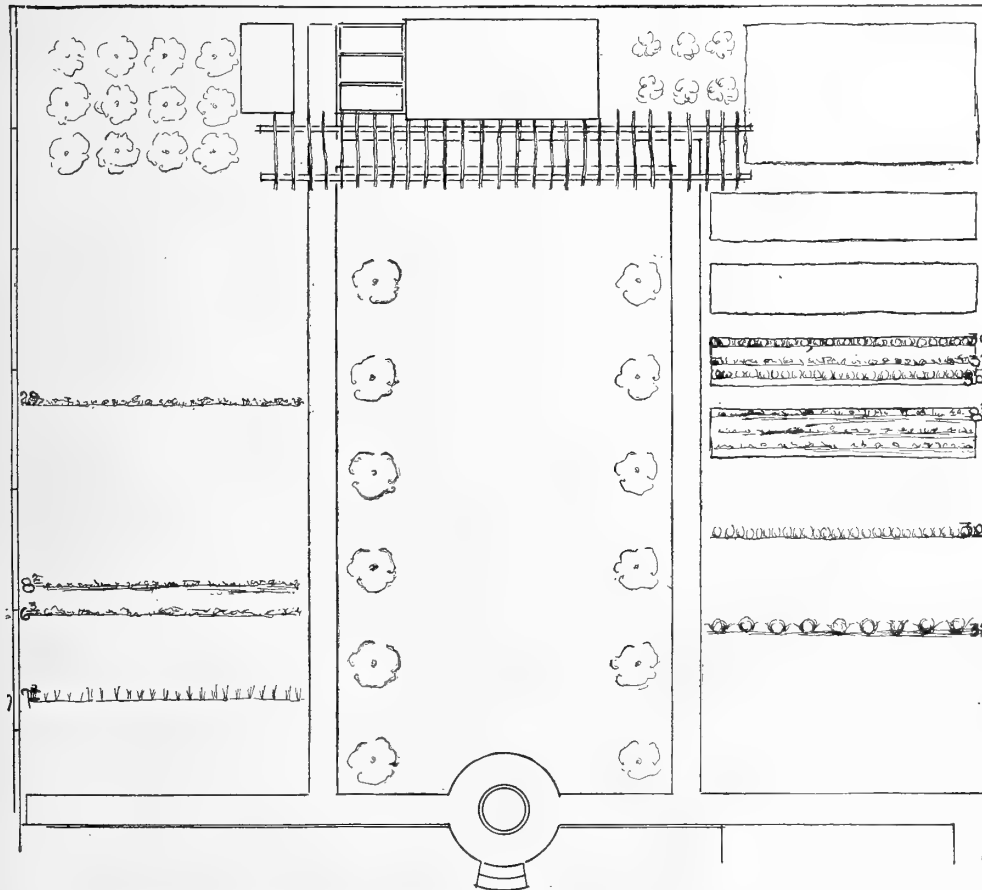
FIRST PLANTING, as made when the buds begin to swell (normally in March in the latitude of New York). Distances between rows 12, 15, 18, 24, 30, 36 or 48 inches



SECOND PLANTING, as made when the pome fruits—apple, pear, etc.—are in bloom. (Normally toward the end of May in New York)



THIRD PLANTING, as made in June. All rows now filled and no further planting until about July 1 when early cabbage No. 2; early peas No. 8; and early lettuce No. 3 will be mature and harvested



FURTHER SUCCESSIVE PLANTINGS; made from early July to middle of August as the earlier first planted crops mature

as much more of a favorite as may be wanted, with as much less of some other. Against this, eight times serving each of the fifteen available during the 126 days of fresh green stuff—this reckoning does not include salads, nor garnishes nor the side issues, such as radishes—will carry through the summer, roughly speaking.

Of these summer vegetables, six are regarded as purely of summer, that is, not susceptible of canning or preserving in sufficiently palatable form to be worth doing. These are indicated in the table by a (*); peas being thus excluded because only a sufficient number to supply the table in summer can be grown in the space.

Naturally, it is planned to serve these purely summer vegetables more often than the others which may be canned, thus balancing the situation. For example, string beans are both a summer and a winter vegetable; that is, they are successfully canned. Instead of making use of them the full number of times during the summer therefore, they give way to stuffed peppers or eggplant or squash, sufficiently often to make it possible to eat all of these latter that are produced.

All beans maturing at such time as one of these, are therefore canned, instead of any being served immediately on the table; and similarly with everything that "doubles up" with a vegetable that must be used immediately or not at all.

ON THIS basis, the canning and drying are looked to first, and only when the requisite amount is reached is the garden product freely consumed during the growing season. This does not mean any dearth of fresh, green vegetables however; for the list does not include salads; but the garden includes them the year around, with the help of its three frames. Also, it affords fresh kale during the very early spring—late winter, actually—and spinach also, and there are perennial onions, furnishing the "scallions" of early spring, tucked away in a corner. Both tomatoes and peppers yield so enormously that no reckoning of them avails; suffice to say that after the ripe tomatoes are canned, there are still enough for table use, and to make chili sauce, and piccalilli (this uses the green peppers, too), and green ones to put away wrapped in paper. These ripen successively, so that fresh tomatoes from the garden were served frequently—and at Christmas dinner!

Field salad, spinach and Siberian kale were planted in late summer and autumn as the spaces were vacated, in patches rather than in rows, that is, in spaces about four feet across the left hand section of the garden. The parsnips and salsify, of course, stay all winter, being dug as wanted. Except where the strawberries, kale, field salad and spinach were placed the ground which had been cultivated through the summer was harrowed or roughened up by hand and sown to rye.

French endive is of course a winter vegetable also—or perhaps I should particularize by saying "salad"—which needs a word of direction, possibly. After being grown through the summer in the garden, the tops are cut away and roots are dug in the fall, and planted indoors, in a dark cellar that has a moderate temperature—the temperature of a cool greenhouse. Soon the blanched shoots will appear; and these are cut from time to time, taking care not to injure the crown of the plant. In this way they will grow throughout the season; and as there is nothing in the

world of salads comparable to this "witloof chicory," the little trouble of growing it is repaid a thousand-fold.

IN EXPLANATION of the strawberry beds, I may say that the original planting is as shown in the first chart. These are the plants that bore last summer, and will bear next year's crop also. The spaces given over to early peas, followed by lettuce and winter beets, and to early carrots, turnips and lettuce followed by a late planting of early peas, also radishes, drilled in in the small spaces, as desired, will be planted with runner plants taken from the old plants late

in October. These spaces will, therefore, become the strawberry beds of the summer of 1918, while the present beds will be destroyed that year; ordinarily they would be kept but two years.

THE asparagus bed is too recently planted to enter into consideration yet. When it comes into bearing, however, it will add materially to the winter as well as summer larder; for 200 roots will furnish on an average of 75 shoots daily, over a period of about two weeks. As a bunch of asparagus usually numbers from 30 to 40 shoots—sometimes not half this—it is obvious that the yield of

the bed will be abundant to meet the family requirements.

AS TO the layout of this garden, it may not be amiss to call attention to the fact that, in times of peace it lends itself perfectly to as little or as much vegetable gardening as its owner may wish to carry on. The central portion, backed by the arbor, lies directly opposite a long porch, upon which the principal rooms of the house open. Here are the potatoes; and here they will be as long as the war lasts. But it is intended that this portion shall ordinarily be lawn, with the dwarf apple trees lining it up on either side.

PLANTING KEY. The vegetables are numbered straight through in the order of their planting as shown on the four charts on previous pages; second and third sowings of a variety are indicated by small indices, as "7²", the second sowing of Golden Bantam corn, "6³", the third sowing of Detroit Dark Red Beets, etc.

First planting made when the buds begin to swell

1. FRENCH SORREL.....3 rows.....15 in. apart—2 in. apart in row
This is a perennial, and will come every year.....1 ounce of seed
2. CABBAGE (early).....1 row.....18 in. to next vegetable row
All-head Early.....Plants 18 in. apart—1 pk. seed
3. ONIONS.....4 rows.....12 in. apart—2 in. apart in row
Southport Yellow Globe.....½ ounce seed
4. PARSNIP.....39 rows.....15 in. apart—6 in. apart in row
Hollow Crown.....1 packet seed
5. SALSIFY.....4 rows.....15 in. apart—3 in. apart in row
Sandwich Island Mammoth.....1 oz. seed
6. BEETS (early).....1 row.....15 in. allowance—6 in. apart in row
Detroit Dark Red.....1 oz. seed for total plantings
7. CORN (early).....1 row.....24 in. allowance—12 in. apart in row
Golden Bantam.....½ pint for total plantings
8. PEAS.....3 rows.....15 in. apart—4 in. apart in row
Blue Bantam. This variety is better for sparse sowing—1 qt. seed
9. CARROTS (early).....1 row.....15 in. apart—6 in. apart in row
Rubicon Half Long.....1 packet seed
10. TURNIP.....1 row.....15 in. allowance—6 in. apart in row
Purple-top White Globe.....1 packet seed
11. KOHL RABI.....1 row.....18 in. allowance—12 in. apart in row
White Vienna.....1 packet seed
12. CARROT (late).....1 row.....15 in. allowance—6 in. apart in row
St. Valery.....1 packet seed
13. LETTUCE.....1 row.....15 in. allowance—8 in. apart in row
All Seasons.....1 packet
14. FRENCH ENDIVE.....1 row.....15 in. allowance—10 in. apart in row
Witloof Chicory.....1 packet

Second planting, to be planted when the pome fruits are in bloom

15. CORN.....2 rows.....24 in. apart—12 in. apart in row
Country Gentleman.....½ pint seed
- 6² BEETS.....1 row.....15 in. allowance—6 in. apart in row
- 7² CORN.....1 row.....24 in. allowance—12 in. apart in row
Golden Bantam.....Seed as above
16. SUMMER SQUASH.....4 hills.....4 ft. apart each way
Giant Crookneck.....1 packet seed
17. CORN.....1 row.....24 in. allowance—12 in. apart in row
Black Mexican.....1 packet
18. BEANS (pole).....1 row.....24 in. allowance—3 feet apart in row
Kentucky Wonder.....1 packet
19. OKRA.....1 long row.....18 in. allowance—18 in. apart in row
Long Pod.....1 packet

20. POTATOES.....24 rows.....24 in. apart—18 in. apart in row
Vermont Gold Coin.....1 peck, to be cut to eyes for seed
- 13² LETTUCE.....1 row.....15 in. allowance—8 in. apart in row
All Seasons.....Seed as above

Third planting, to be planted after June first, when ground is thoroughly warm

21. LIMA BEANS.....3 rows.....4 ft. apart—4 ft. apart in row
Giant Podded.....1 packet seed
- 17² CORN.....2 rows.....24 in. apart—12 in. apart in row
Black Mexican.....1 packet
22. WINTER SQUASH.....2 hills.....8 ft. apart, in hills with No. 17
Hubbard.....1 packet seed
23. TOMATOES.....3 rows.....4 ft. apart—3 ft. apart in row
Bonny Best.....1 packet seed
24. TOMATO.....1 row.....3 ft. allowance—3 ft. apart in row
Cherry Currant—useful for salads and preserving.....1 packet seed
25. EGGPLANT.....1 row.....24 in. allowance—2 ft. apart in row
Black Beauty.....1 packet seed
26. CUCUMBER.....6 hills.....5 ft. allowance—40 inches apart in row
Long green.....1 packet seed
27. PEPPERS.....2 ft. allowance—2 ft. apart in row
Sweet Upright.....1 packet seed
28. CAULIFLOWER.....1 row.....2 ft. allowance—18 in. apart in row
Danish Dry Weather.....1 packet

Succession planting, to be made about July first

29. RUTABAGAS.....2 ft. allowance—8 in. apart in row
Imperial Hardy.....1 packet seed
30. LETTUCE.....1 row.....15 in. allowance—6 in. apart in row
Eclipse Cos (Romaine).....1 packet seed
31. BEETS (winter).....1 row.....15 in. allowance—6 in. apart in row
Long Smooth.....1 packet seed
32. CABBAGE (winter).....1 row.....2 ft. allowance—2 ft. apart in row
Danish Ballhead.....1 packet seed

To be planted July 15. 6³ Beets—1 row; 7³ Corn—1 row; 30³ Lettuce—1 row.

To be planted August 1. 8² Peas—4 rows; 30³ Lettuce—1 row.

Plants of cabbage, tomatoes, peppers, and eggplant should be started indoors in March, or February, and thus be ready for setting out at the dates indicated. It is usually necessary to raise one's own plants in order to secure the varieties, as few of these are grown by dealers. The dealer confines himself usually to the popular market kinds, while these are selected for special quality, for the home garden.

NOTE. The varieties named in this key are a record of those actually used last year in working up the data for this article. Individual preferences and other considerations will naturally lead to changes according to circumstances. (See "Your Seed Order" on page 197)

Planning for Fruit This Year and After M. G. KAINS

New York

[EDITOR'S NOTE: Years ago every home garden had at least a "few berry bushes." And it was a good old custom that led our grandfathers to plant apples the while our grandmothers made jam and preserves. Surely something of the real meaning of a garden has gone out of our lives in these recent days when we depend on the commercial orchardist in a far off state, whose first element of merit in a fruit is its "shipping" resistance—developed at the cost of intrinsic qualities like flavor, aroma, tenderness and juiciness. We can plant some fruits without in the least sacrificing the vegetables or flowers—and by the way, what's prettier than a fruit tree in blossom? Fresh fruits fill a need in our daily food requirements that nothing else supplies, and moreover, at this time it is patriotic to plant permanent food crops, nuts, berries, and such like, as well as cabbages and potatoes. The big problem before us this year is food production—distribution and conservation are being ably looked after; but production is unorganized and it is in that direction that the individual home gardener can make his influence felt in contributing to the nation's need. Make each home garden as nearly complete as possible. Plant fruits, fruits and more fruits!]

WHEN I see a garden without fruit I recall the face of a lady I once met. It wore a constant look of blank surprise. At first I couldn't make out what gave her that strange expression but after some surreptitious scouting I discovered that she had no eyebrows! A garden without fruit is equally blank. If you have newly moved to the country or the suburbs you may not have thought of putting fruit plants into your garden because

you have never learned what really good fruit is—that is home grown, fully ripened, and of "quality" varieties that don't get into the stores. Maybe you still have the allusion that fruit is "hard to grow," that there's a constant and losing fight against bugs and diseases or that too much space is required for the normal development of the plants—to say nothing of time—and that your little plot may be more profitably devoted to vegetables.

What the Small Space May Produce

SUPPOSE, we admit, that there isn't room for "tree" fruits. Still enough "small" fruits to supply the family may be grown in an ordinary suburban backyard and yet leave space for a goodly selection and quantity of vegetables. Since a currant or a gooseberry bush in full bearing and ordinarily well managed will yield from four to eight quarts, or even more, every year, it is easy to see that half a dozen of each should furnish



Why you should not prune a currant in spring. It has flower buds to the very tip

ample supplies for the ordinary sized family. Red and white currant varieties are much alike in flavor, but the black ones are as different as could be imagined. So here for a start are three distinct kinds of easily grown fruits that require but little space.

A dozen to a score of blackberry plants will give enough fruit for eating fresh, canned, or made into jam. If there is space for double the number of plants add the Iceberg, a so-called "white" variety that for home use is interesting and unusual. Raspberries are much more important, however, so a dozen or a score plants of the red kind will give a fair supply and an equal number of black ones will add both variety and difference of flavor. There are purple and yellow kinds also; but these mostly resemble the red ones in flavor. The purple ones are not as attractive looking as the reds, but are specially good for making jam and canned berries. The yellow ones are a novelty to many people because they are rarely seen in the stores.

Strawberries—50 to 100 plants each, of an early, a midseason, and a late variety—

will yield an ample supply of fruit for three weeks or a month before the raspberries start. They start the season in the home garden just about the time the appetite is becoming cloyed with rhubarb; and they start a procession of fruits which, by choosing the right varieties, one may keep moving from June until January or even later, the berries continuing till October thus overlapping the grapes which start to ripen in early September. Thus a suburban lot can be made to meet the needs of the family appetite for fresh fruit for six or even eight months and also supply the home table with canned fruit, jams, jellies and preserves without having any of its space allotted to tree fruits of any kind.

Quick Returns from Judicious Plantings

THAT old rhyme "He who plants pears plants for his heirs" must have been written when people knew very little about home fruit growing and is largely responsible for the belief that one must wait for years before he can gather fruit from his plantation. While certain varieties and certain methods require a great deal of time, there are precocious varieties and short cuts that are

specially to be commended to the owners of small areas. Many people who don't plant fruit trees at all would probably do so if they knew that they can positively gather a crop within two or three years of the time they set out the nursery stock and every year after. That's better returns than you can get from sowing seed of biennial herbaceous flowers! Some fruit can even be gathered the same season! Yes, plants of certain varieties (or which have been treated by the nurserymen in certain ways) may be set this spring with the assurance that they will start to bear in the summer—the summer of 1918.

UNGUARDED theory? Not at all! Look at some actual facts:

Last summer I gathered raspberries, currants and gooseberries in my Long Island backyard from plants which until four months previous had been growing in Western New York, and strawberries from plants which until three months before had been growing in southern Maryland! The soil (save the mark!) was anything but favorable, because the builders of the house had spread the subsoil from the cellar excavation all over the surface, and when I took possession of the place there was only a sparse and scrawny growth of weeds upon it. But that's another story.

"How did we do it?" We didn't do it at all; we claim no credit. In the case of the strawberries—Progressive and Superb—the fruit was due to the variety; in the cases of the bush fruits it was due to the nurseryman. The two strawberry varieties would have borne a few fruits in June had we allowed them to do so, but we wanted fruit later in the season so strengthened the plants by removing the blossom buds, as soon as they appeared, up to the middle of July. Thus we got strawberries from August until October, when frost spoiled the fruit. The raspberry, currant and gooseberry plants had been transplanted in the nursery so they had specially strong root systems and were thus ready to bear fruit the first season. To be sure, these plants cost about 50 per cent. more than one year

plants; but what family gardener would hesitate to pay even double for plants which will enable him to save a full year in getting fruit, especially when the superior, transplanted plants cost only 50 cents to \$1.00 a dozen? With proper care such plants will increase in productivity for the next two years reaching a steady and high annual yield and keeping it up for ten or fifteen years.

Early Bearing Tree Fruits

WHAT fruit trees will give earliest returns? Before answering that question it seems necessary to state the fundamental principle that, with two exceptions, fruit trees should not be older than two years when bought from the nurseryman.



Fruit trees trained as dwarfs to a trellis may be used in very formal schemes

One of these exceptions is the peach which should never be older than one-year when purchased. The other is that trees which have been specially prepared in the nursery by root pruning, etc., may be three or four years old; trees of these ages not so treated are sure to prove disappointing. In some cases they may bear a few fruits the same year as they are planted in the orchard but usually not until the next season. It is better for general planting, however, to rely upon two-year trees, better still to choose one year specimens if



Last year's berry cane will throw out lateral shoots which bear flowers and fruit. Remember this when tempted to trim up in spring. Only cut out canes that have fruited

immediate results are not an object, because in the long run these younger trees will be more satisfactory and productive. Older trees that have been grown in pots or tubs may of course be used.

Facts again? Certainly! Last season I planted several hundred one-year peach trees, some of which had blossoms last spring! No fruit followed, however. I did not expect it. The trees are now full of flower buds for the coming spring. I also planted several score of two- to four-year apple, cherry and plum trees. A few of the oldest sour cherry trees bore some fruit last summer; but the two-year trees have set nearly as many fruit buds for next season's crop and moreover are shapelier trees. This is equally true of the young plum and sweet cherry trees. Several of the hundred or more two-year apple trees will have flowers this spring; whether or not they will mature fruit remains to be seen. Two-year old quince bushes planted last spring blossomed but bore no fruit; they probably will have a fair show of quinces next fall.

Among trees not included above are a lot of dwarf and standard pears, two years old when planted. A few will bloom this spring. There are also a lot of one year apple, plum, and sweet cherry trees which bid fair to be the finest formed trees in the whole plantation because they were pruned back to have the main or frame limbs develop exactly where wanted. Herein lies one of the chief advantages of buying one year old trees. Of course, such trees usually require a year or two longer to come into bearing but they generally catch up to and overtake the older trees! In the orchard I have been discussing, partly set in the fall of 1916 and partly in the spring of 1917, we will see the beginning of fruit production in 1918. Isn't this quick enough for any one?

Some varieties are more precocious than others. The Rochester peach is the only one that bore blossoms last spring upon trees set the previous autumn—a year earlier than usual. Montmorency, English Morello, Early Richmond, and Marguerite cherries often begin

to bear the second season after two-year trees have been planted; Bartlett pears often when only one year older. Among the apples several are proverbial for precocity: Oldenburg and Yellow Transparent often start the year after being transplanted; indeed they have been known to bear a few fruits while still in the nursery row!

Where Space Economy is Imperative

DWARF trees are specially desirable for small places. The suburban garden which would be crowded if two or three standard apple trees were planted on it can easily accommodate *thirty to fifty dwarf trees* of apple, pear, peach, plum, apricot, nectarine, sweet and sour cherry. A still greater advantage is that dwarf trees begin to bear while still very young—in a year, or not more than two or three after planting, whereas the same varieties grown as standard trees might require two or three times as long.

**** This article is the beginning of a series dealing with the home fruit garden in the old fashioned way.**

Solving the Fuel Problem

NECESSITY FOR CONSERVING THE FUEL SUPPLY—VARIOUS WAYS OF SAVING COAL

THE Fuel Administration directs attention to the fact that under the present condition of fuel shortage, it becomes necessary for every operator of a greenhouse to carefully consider his fuel problem. The shortage is such that at least 10 per cent. and possibly 20 per cent., of fuel must be saved for the necessities of war. While every effort is being made to increase production, it has become perfectly evident that this alone will not suffice. There must be a careful consideration of the uses to which coal is being put and an equally careful consideration of the efficient use of coal in essential industries.

Greenhouse heating presents special problems of its own. One of the largest items in the efficient use of fuel is the character and degree of attention that is given to the fire. In residence heating practice, a satisfactory plant is designed to maintain service through a period of eight hours without attention. In manufacturing and public service steam plants, good hand firing implies firings every three to five minutes apart. In house-heating practice, about 50 per cent. of the heat of the coal is usefully employed, while in good steam boiler practice, 70 per cent. is readily attained. This very considerable difference is to a great extent due to the degree of attention which is bestowed upon the fire. Greenhouse practice occupies an intermediate place between these two extremes; the smaller greenhouses treating the firing of the boiler as an incidental chore and obtaining rather indifferent results, while the larger houses may approximate closely to the practice of commercial steam plants.

THE first consideration should be as to what degree of attention can, under the circumstances, be afforded to the furnaces of the heating plant. Increased attention means coal economy. The furnace should be in good order; the grates in such condition that good coal does not fall through broken places; and shaking grates should be used with caution. If more than 30 per cent. of the weight of the refuse is unburned coal, there

is something the matter with the grates or the practice in handling the fire. If the boiler is brick set, the bridgewall should be in good condition, the space behind the bridgewall cleaned out so as to give as large a volume in which gases can mix as possible, and the heating surfaces of the boiler should be cleaned often and thoroughly.

One of the most prolific sources of loss is by leakage of air into the boiler setting. This lowers the temperature of the gases, reduces the draft, and carries off a large amount of heat up the chimney. Leaks are found in ill-fitting firing doors, cracks in the boiler setting, bad fitting between the boiler and the brickwork; and all of these can be found by taking a lighted candle and holding it near to a suspected leak. If the candle flame is drawn toward the setting it is evidence of a leak that should be fixed. It is not at all difficult to increase the efficiency of the use of coal in some plants 10 or 15 per cent. by careful attention to this single detail.

THE process of burning appears to be such a simple one, with which we have so long been familiar, that too little attention is apt to be paid to the requirements of its efficient conduct. In competitions between expert firemen differences of 10 per cent. in economy are quite possible, due entirely to the degree of skill. It is easy to imagine that comparison between skilled and unskilled operation would show differences of 20 to 30 per cent.

Good firing is an art that can be acquired only by well directed practice. First, there must be correct notions about the process of combustion and the function of the fuel, the air, the grates, the combustion space, the draft, the dampers, and all the elements that enter into the problem. This information can be had from books. The United States Bureau of Mines issues directions for hand-firing which should be in the hands of every fireman. Technical Paper 80, "Hand-firing soft coal under power plant boilers," is most helpful for this purpose. With the proper ideals the acquirement of skill to put these

ideals into practice is a matter of time and willing attention. It is rarely, however, that the best way is the easy way. Firemen do not like to give frequent attention to a fire. It is so much easier to overload the furnace at long intervals. The firemen do not like to clean flues and keep the heating surfaces clean; as a matter of fact it is easier to shovel coal into the furnace than it is to attend to a dirty and disagreeable job of flue cleaning. Under the present condition, however, the man who faithfully performs these disagreeable duties and saves some fuel is performing "his bit" quite as truly as the worker in the munition factory.

THE owner of a plant must consider carefully the several fuels available. One must consider not only the fuel best adapted to the furnace or to the desires of the operator, but must consider whether such fuels ought to be used under the present difficulties of transportation and supply. In general, that fuel should be used which either escapes railroad transportation or, at least, has the shortest haul, since transportation problems are a main factor in the present fuel shortage. Waste wood and fallen timber should be utilized.

THE suggestion is frequently made that oil be substituted; but investigation usually discloses the fact that oil at the present time should be put to much better uses than for fuel, that the supply of fuel oil is also limited, and that it should be used as near the source of supply as possible.

FOR very small plants electric heating has been suggested, but, there again, it must be borne in mind that the electric current at best represents only a very small per cent. of the coal burned in the central station to produce it. In very large central station plants the current at the switchboard represents about 10 per cent. of the heat energy in the coal. It is therefore rarely that electric heating can compete in any way with the direct use of coal. Its use must be confined to cases where convenience is predominant and where loss of heat by radiation can be carefully restricted.

Your Seed Order and the Tangle of Varieties

GETTING THE BEST OUT OF THE CATALOGUES—AN EVER PRESENT PROBLEM CONSIDERED IN A PRACTICAL AND REASONABLE MANNER

THE gardener, particularly the beginner, will find a practical selection of varieties a serious problem. Besides, there is that other big problem, which confronts the man who is trying to make out a list of vegetable seeds for his garden, and that is the enormous duplication of varieties. Yet, who is to be the judge as to whether or not a variety is new or not? To put out an old variety under a new name often benefits the seedsman who does it. But in the end, it proves poor business for the gardening public as well as the seed trade in general. Some form of standardization of varieties we should have, and will have eventually, and it will be a tremendous help to the whole garden movement.

IN THE meantime what is the individual planter going to do about making an intelligent selection of varieties? Out of the scores of names of tomatoes, or lettuce, or sweet corn, which he will find in a half dozen catalogues, how shall he tell what to choose? Here is one way to go about it: Try to think of vegetables as being of certain *types*, rather than representing a lot of *varieties*. When that point is reached you will have the key to the correct analysis of the whole situation. Then, when reading descriptions, study *the essential facts* in connection with any vegetable of new or old type that interests you. After reading a few, you will soon be able to separate the chaff from the wheat, to make up your mind which statements are made for effect and which are dictated by the real reason why such and such a type deserves your consideration.

Now, just what is meant by "types of vegetables"? The term "type," as used here, stands for a classification of vegetables according to their form and pronounced difference in growth or appearance. Thus, all "root crops," like carrots, beets, radishes, etc., should be looked upon as being divided into three distinct types: the round, the half long, and the long. Nearly all vegetables of which we eat the green leaves, like cabbage, lettuce, etc., are of several distinct types, according to their form and habit of growth. Some cabbages have pointed heads, others round

heads, still others flat heads. As a rule, all vegetables of the same type are generally endowed with the same quality. Therefore, *first picking out the types* that will best serve your needs, will greatly simplify the choice of varieties, which term stands for the individual members of one type.



Where economy of space is important the bush bean is the indicated type. It bears its crop compactly

IN SOME instances, even the selection of the proper type for one's needs is not an easy matter. Take peas, for instance, among which we must recognize six types: the dwarf and the tall growing, the smooth-seeded and the wrinkled-seeded, the early maturing and the late. Which do you want? That is *the one question each gardener must answer for himself* in connection with every kind of vegetable. To help him answer it correctly, so that the resulting garden will prove a source of greatest satisfaction, is the purpose of the following paragraphs.

Beans.—There are two broad divisions, namely, the dwarf or bush type and the tall or pole type. There are three sub-types of bush beans—the green-podded, the wax-podded, and the large-seeded used as shell beans only. Among the green-podded and wax-podded we find a variation in the type of pods, some being flat, others round. The round-podded beans are more brittle, fleshier and contain more water, hence wilt easily. The flat-podded sorts are generally more prolific, contain more fibre, but look better on the market table. Since all modern beans are stringless, there is no excuse for growing "stringy beans" in any home garden. Bountiful (flat) and Stringless Greenpod (round), Rust Proof Golden Wax (flat) and Round Podded Kidney Wax, are dependable varieties of their types.

Among the shell beans, Dwarf Horticultural, Red Kidney and White Marrow-fat are the most productive. Then there are the bush limas of which Burpee's Bush

Lima is the most popular, white Fordhook Bush Lima is of choicest quality.

There are four broad types of pole beans: the green-podded (McCaslan, Kentucky Wonder); the wax-podded (Golden Cluster); the large seeded (Horticultural); and the limas. Of the latter, use Early Leviathan for planting in northern climates, and King of the Garden for biggest yields, where long seasons reign.

Beets.—Flat turnip-shaped, round, half long, and long types divide beets into early, midseason, and late varieties. The best known flat turnip-shaped beet is Crosby's Egyptian. The choicest round beet is Detroit Dark Red, which is also quite early. Model Red Globe is of the round, midseason type. The usefulness of the half long type is quite limited, while the long type (Long Smooth Blood) is by far the best for winter storage. However, the growing of long beets should not be attempted in heavy clay or on stony ground, since that will cause poor size and shape of the product.

Cabbage.—For home garden purposes, three types of cabbage deserve consideration, namely, the early pointed headed, the round cabbages, and the Savoy. The early pointed-head type, Early Jersey Wakefield or Charlestown Wakefield, are the standards for all sections. Of the early round-headed sorts, Copenhagen Market is by far the most productive. For summer use, consider the flat, medium-sized type, slow to break to seed, as represented by All-Season and Succession. For storing for winter, choose between the flat-headed (Flat Dutch, Surehead) and the round-headed (Danish Ball-Head) types. While the latter, where it develops perfectly, makes the harder head of the two, the flat type is adapted to a greater range of soil and climate. Try out both, unless you know from experience which is the better for your particular section. The Savoy type, with dark green, crinkled leaves, is of particularly fine flavor, and every home garden should pro-



Long type of carrot which takes a longer time to grow and needs a deep soil



Short type of carrot, early maturing and adapted to shallow soils

duce at least a few heads, for fall and early winter.

Carrots.—Again size and shape determine season of maturity and value of crop for different purposes. French Forcing and Gold Ball are of the small round type, but very early. Oxheart is the largest of the short blunt type. Chantenay is the most popular half long, while Danvers is the heaviest cropper of the half long type. Improved Long Orange is the longest, but also latest, and by far the best keeping winter type.

Cauliflower.—In the average home garden, one variety of cauliflower will be sufficient. For general purposes, the best for early and late, is the short stemmed early type (Early Snowball, Best Early). For a longer season, Dry Weather planted at the same time will come along after the varieties mentioned.

Celery.—Though there are a number of quite distinct types of celery two of these will cover the needs of the average garden. For early, use one of the standard so-called "self blanching" types (Golden Self Blanching, White Plume). To follow this for late fall and winter, either the dwarf growing winter sorts, such as Easy Blanching or Columbia, or Giant Pascal, of the late tall type, will prove useful.

Cucumbers.—Any improved variety of the White Spine type, such as Klondike, Davis Perfect, from one planting made in May and another in June should give plenty of "cukes," large and small, until frost. If a special quantity of small pickles is wanted, one of the small fruiting varieties, like Boston Pickling or Everbearing may be used in addition to the above.

Lettuce.—All catalogues recognize three distinct types, namely, the loose-leaf sorts, that do not form heads, the head lettuce and the Cos varieties. The gardener who never grew lettuce before, should pin his faith to the loose-leaf sorts because they are less exacting in their cultural requirements than the head lettuces. Both Black Seeded Simpson and Prizehead form large bunches of attractively curled leaves, where each plant is given a foot of space in the row, to permit of proper development.

However, for real quality in lettuce we have to look to the heading type of lettuce, in which we find, as two divisions, the Butterhead and the Crisphead. The former is the most widely grown, the latter the more reliable to grow during the summer months. Among the Butterhead type, May King is, perhaps, the best known early, California Cream Butter the choice as a second early, and All Seasons the most heat resisting.

"Crispheads" are so-called because of the extreme brittleness of the leaves which have very prominent midribs. These curve so strongly to the centre that frequently the head will rot or burst open on the side before allowing the seed stalk to appear. This type is the most valuable for mid-summer, and Iceberg is the best known sort for all sections.

Though inclined to become bitter and tough during the summer months, the value of the Cos type as a means of securing a constant supply of lettuce is just beginning to be appreciated. Express or Eclipse Cos is a small but very early variety, while Paris White Cos is a later but very much larger sort.

Melons.—Don't make the mistake of trying a dozen varieties, especially if you are just beginning. One each of the green-fleshed and the salmon-fleshed types, which will ripen fairly early, should be enough for a start. Rocky Ford—green-fleshed; and Emerald Gem, or Hoodoo—salmon-fleshed, are two reliable sorts. A new type of melon is Henderson's Bush which can be planted as close as three feet apart each way, making the cultivation of this crop possible where otherwise it could not be thought of, for lack of space.

Corn.—The yellow type of sweet corn, has increased so greatly in popularity during the last few years that it bids fair to push the white type into second place for home garden use. Of the early yellow corns, Golden Bantam is the original and still by far the most popular. Second early and main crop yellow corns are Sweet Orange, Golden Cream, Goldenrod, and Golden Giant. Of the white type, White Cob Cory, Metropolitan, Early Minnesota, are reliable first earlies. The second early are Howling Mob, Aristocrat, Cosmopolitan. In the late type of white corn, two sub-divisions are recognized in sorts with straight rows and others with kernels arranged in very irregular fashion. The most popular of the last type is Country Gentleman, while the straight rowed type is represented by the "Evergreens," of which Stowell's is the main stand-by in all sections.

Onions.—Three types serve all purposes in the average home garden. A mild, extra early is White Queen. White Portugal is later, but also a better keeper and grows larger. The Yellow Danvers type is perhaps the best all-round. The red type, of which Southport Red Globe and Red Wethersfield are the best known, is the latest to ripen, and the product keeps particularly well. In addition to the seeds sown, for earliest results, "sets" of white, yellow or red onions may be set out as soon as some of the ground may be worked in the spring.

Peas.—The first thing to decide about your peas is whether you are going to brush them or not. The dwarf sorts are the easier to grow and require less room, but do not yield as heavily nor for as long a season as the tall sorts. With the increased difficulty of getting brush or wire, the dwarf sorts are gaining in popularity. The smooth-seeded type of which Extra Early and Alaska are the best known, is the hardiest. But plant only enough of these for the first pickings, as the wrinkled peas, though they cannot be planted quite so early, will mature almost as quickly and will be found superior of flavor, besides being easier to shell. The dwarf early wrinkled type (Little Marvel, Thomas Laxton and Sutton's Excelsior), may be followed by the medium or late dwarf (Dwarf Champion, Carter's Daisy, British Wonder). Or these early wrinkled may be followed by the second early and late tall growing type, of which such sorts as Alderman, Telephone or Unrivalled give general satisfaction. Order enough seeds to be able to plant again in August, using an early variety for a fall crop.

Peppers.—Two types, an extra early (Neapolitan, Sweet Upright), and a medium main crop (Ruby King and Ruby Giant), will serve all requirements. The large, very late peppers (Chinese Giant) require a very long season to mature a good percentage of the fruits.

Radish.—There are three general types

which may be classed as spring, summer and winter. For spring use the small, round, rapid growing sorts, like Scarlet Globe or Rapid Red, are the most widely grown. Crimson Giant Globe, is a larger growing sort of this type. Among the long type of early radishes, Long Scarlet Short Top and Icicle lead all others in general usefulness. Icicle especially is stamped by popular approval to be the best all-round, general purpose white long radish for the home garden everywhere.

The summer type of radish grows much larger, but requires also a longer growing period to reach good size. Chartier or Shepherd may be considered the connecting link between the early long red sorts and the summer sorts. Of these, White Stuttgart is a popular, large, top-shaped sort of dependable qualities.

Among winter radishes, the European and Asiatic types compete for popular favor. Round, Half Long and Long Black Spanish have by far the finest flesh and keep all winter. White Chinese and China Rose grow very much larger, have more brittle flesh, are milder but do not keep so well. The winter type of radish should not be sown until July, for winter use.

Spinach.—Either Long Season or Victoria mature quickly and go to seed quickly during warm weather. New Zealand "spinach" is an entirely different plant, but furnishes "greens" similar to spinach throughout the season. Chard is really a type of beet, but deserves attention as the most continuously yielding of any "greens." The midribs of the leaves may be cooked like asparagus and are delicious. The savoy-leaved variety Lucullus is the best.

Squash.—The bush summer type (Scalloped Bush and Summer Crookneck), matures very early. Then there is the small, medium early, short-vined type with fruits good for either summer or winter use. Good sorts are Fordhook, Delicata. The best known of the large vined, late maturing, winter squashes are Hubbard, Delicious and Boston Marrow. The "vegetable marrow" type is distinct from any of the foregoing, and is not nearly so well known in this country as it should be.

Tomatoes.—Two distinct types of these deserve consideration: The dwarf, forming compact bushes, about three feet tall, and the tall or standard tomatoes, branching freely and recognizing no limit in growing tall where given a chance to climb and being tied to supports. The dwarf type is particularly useful for small gardens, since it will yield fair crops, planted as close as two feet apart each way. However, the average size of the fruit of such popular standards as Dwarf Champion (purple) and Dwarf Stone (scarlet), cannot compare with average fruits of standard or tall sorts. The exception to this is Dwarf Giant which may almost be considered a Dwarf Ponderosa. It bears fruits of really remarkable size in immense quantities.

The color of fruit divides the tall or standard tomatoes into two classes. Among the bright red sorts, Sparks' Earliana, Chalk's Early Jewel and Stone outclass all others in popularity. They mature in the order named. Among the purple fruited kinds, we find June Pink, Globe, Trucker's Favorite and Ponderosa to occupy the same relative positions. The purple-fruited types are of milder flavor than the bright red ones. Then, there is the yellow type of tomato



The ordinary type of tomato needs space and trained on a trellis will grow to almost any height. It bears profusely

(Golden Queen) good only for salad purposes and of so mild a flavor that it is almost tasteless.

For preserving, there is a number of small fruited sorts of various shapes and sizes, from the small Currant to the large Rose Peach. A few plants of these generally provide an abundance of fruit for the purpose.

Turnips.—Look at turnips very much as you would at radishes. The same general division as to types holds good. The small, early, Milan Turnips are good only during spring. For summer use, grow the firmer fleshed Purple Top, White Globe or Strap-Leaved. For fall, White Egg, Amber Globe or Golden Ball do well. For winter use, depend on the best keeping Swedish turnips or rutabagas. Besides being of different types, as far as shape is concerned, turnips and rutabagas may be divided into white-fleshed and yellow-fleshed kinds. There is

very little difference in the quality of the flesh, but the yellow-fleshed kinds provide dishes of a richer appearance.

When in Doubt What or How to Order

HERE is a list of pedigreed varieties in the different types that have proven dependable in many soils and sections. The quantities of seeds suggested cover the needs of a home garden 40 x 60 ft. which provides food for a family of six from early June until well into the winter, when stored beets, carrots, etc., put variety into the menu.

Beans.—(Green pod) one pint each Bountiful and Stringless Green Pod for extra early; Refugee Stringless, for midsummer and early fall. (Wax) one pint each New Kidney Wax, Hardy Wax and Sure Crop Wax. Early, midseason, and late. One pint of Fordhook Bush Limas.

Beets.—One ounce each Crosby's Egyptian and Eclipse for extra early, Detroit Dark Red and Edmands Blood for main crop, Model Red Globe and Long Smooth Blood for winter storage.

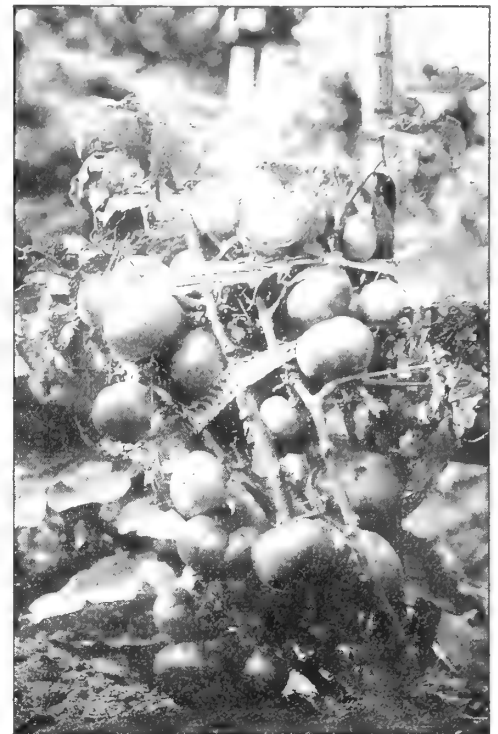
Cabbage.—One package each Early Jersey Wakefield, Copenhagen Market, Succession, All Seasons and Premium Flat Dutch. These mature in perfect succession in the order named and each packet will provide several hundred plants.

Corn, Sweet.—Half pint Early Peep O'Day or Malakoff. One pint Golden Bantam. Half pint Country Gentleman for late crop.

Lettuce.—One packet each Black Seeded Simpson for first early, California Cream Butter for succession. Paris White Cos for mid-summer. Half ounce each Naumburger or Tenderheart, All Seasons, Iceberg and Crisp As Ice for successive sowings and a constant supply.

Onions.—One packet each, White Portugal, Southport White Globe, Yellow Globe Danvers, Red Wethersfield; and Prizetaker for extra large, mild onions.

Peas.—One pint each, Prolific Extra Early (smooth-seeded); for crop succession Little Marvel, Sutton's Excelsior, Thomas Laxton and Improved Stratagem. These are all dwarfs, maturing in succession. To fill the "gap" between Thomas Laxton and Improved Stratagem, use Alderman, with a 5-foot vine or make repeated plantings of Little Marvel.

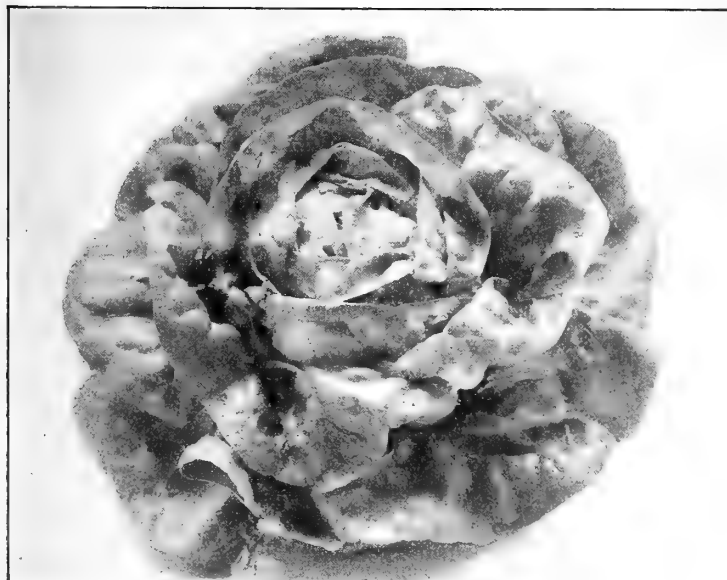


For small gardens the dwarf type of tomato is economical, since it may be planted 2 x 2 ft. Yields fairly well

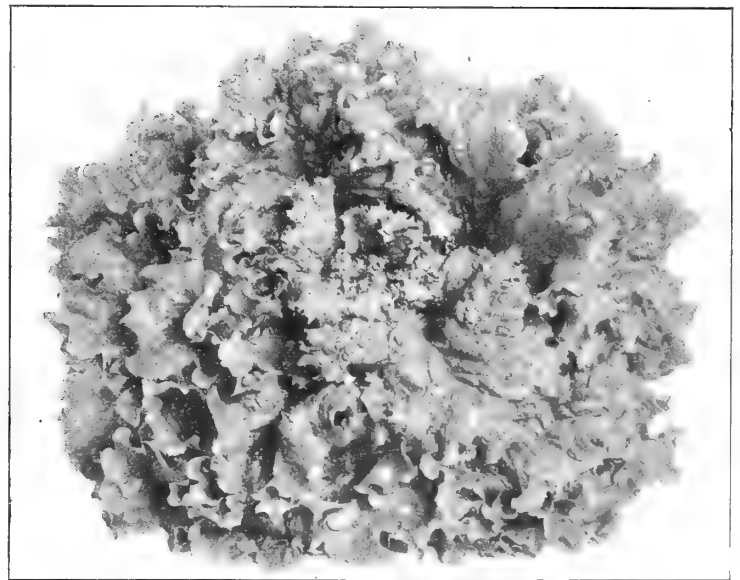
Radishes.—Half ounce each Scarlet Globe, French Breakfast and Cincinnati Market for extra early and succession. One ounce each White Icicle and Chartiers for midseason and repeated sowings. Half ounce each Round Black Spanish and White Chinese for early and late winter use.

Tomatoes.—One packet each Sparks' Earliana, Chalk's Early Jewel, Livingston's Globe, and Stone.

NOTE:—The packets of seeds of both, cabbage and tomato, contain sufficient seeds to provide several hundred plants. Make a cooperative agreement with some garden neighbors whereby they will provide some plants while you provide others. Nothing is more commendable than the "get together" spirit in gardening and moreover we cannot afford, this year, to waste good garden seeds.



Head or cabbage lettuce which is the only type that "heads." Some people do not realize that all lettuces are not of this type



Crispleaf type of lettuce which has strongly developed ribs, and is, broadly speaking, the type that will do best in hot weather

Make Your War Garden Attractive

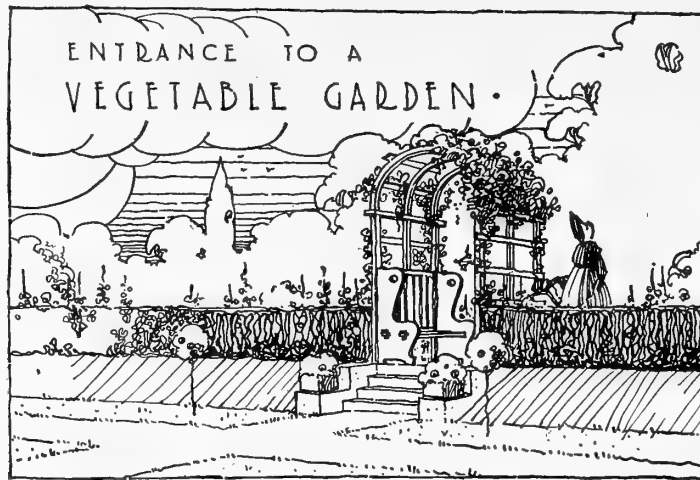
LEONIDAS WILLING RAMSEY
Landscape Architect, Iowa

THE VEGETABLE PLOT HAS COME TO STAY—WHY NOT MAKE IT A REAL PART OF THE GARDEN PICTURE

DURING the last spring and summer every available space was turned into a vegetable garden in order to battle the higher cost of living caused by the war, with the result that the increase in production is estimated to be as high as 250 per cent. It is hardly possible that the cost of living will ever be as low as it has been in the past, which makes it advisable that we consider the vegetable garden a permanent part of our home grounds. But at the same time we should realize that because we have a vegetable garden there is no reason that we should allow the rear yard to be arranged in an unsightly manner; for, with a little care, the place may present as attractive an appearance as was the case before the vegetable garden was added. We too often associate the vegetable garden with the tin can alley and the garbage dump and we fail to realize that it may easily be made an integral part of the home grounds from which we can receive that satisfaction which comes when a utilitarian problem is handled efficiently and attractively.

Many of us had never owned a vegetable garden before this last season and had rather considered work in the garden as a very uninteresting form of labor. We were surprised to find the pleasure which may be derived from working in the garden and in seeing plants develop from the time of their germination. Then, too we have found that vegetables raised by our own hands seem to taste better than those purchased at the market and that the advantage of having fresh parsley and the like for garnishing purposes is a matter of no little consideration.

GARDENING has been found as fascinating as other forms of exercise and as a matter of material for conversation has taken its place along with golf, base-ball, war, politics, weather and religion. Of course, there have been disappointments, but when



next season comes around we will have the experience of one season's work and will know a little better how to tackle the problems which beset us at the outset. Probably the greatest mistake made was in having the garden larger than could properly be cared for. A small vegetable garden worked properly will yield more than a larger garden worked carelessly.

In parts of Europe where every available space is made to produce its share, there are more attractive small homes and more unity of design than in our own country. Should we not plan our own gardens to be as attractive as possible, for then we would enjoy the work in them all the more, and be more apt thus to make a continued success of them? Some time ago the writer visited a little garden which was owned and tilled by a man who spent his days in hard labor; and yet, his garden was arranged so attractively, that one could not help but realize that in it he found peace and contentment. Why should we not have attractive little nooks and shelter houses in the garden as well as in any other part of the place, for surely we spend more time there than any other part of the home grounds?

Planning the Vegetable Garden

THE vegetable garden should be arranged along formal lines rather than otherwise; for the fact that rows running north and south are best for plant growth and that a geometrical arrangement is best from a standpoint of efficiency, confine our efforts to an arrangement far removed from the least bit of informality.

The walks are the backbone of the ground plan, and if carefully handled an interesting design may be developed. Care should be exercised, however, that the design be as simple as possible, for a design of a very intricate nature should be employed only when there is an abundance of help to care for the garden.

Probably the cheapest and the best path to be used in the vegetable garden is the natural grass, with edgings which would add crispness to the design. Although concrete walks are often used they are a bit chilly in appearance even for the vegetable garden. They have the advantage, however, that they are easily cleaned and are used properly when the walks connecting directly with the vegetable garden are of concrete. Macadam and gravel walks have a pleasing natural tone

but they become sticky when dampened and the garden cannot be watered as freely as otherwise.

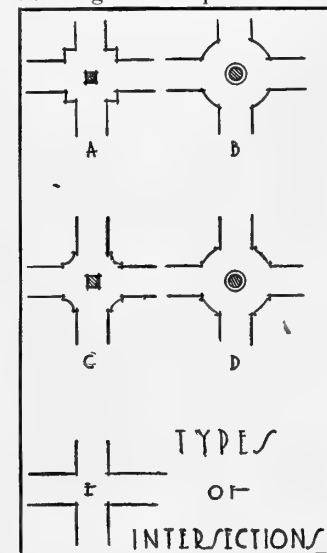
Brick walks are perhaps even better than the natural grass if one is willing to go to the additional expense, for the effect gained would warrant the expenditure. They are easily cleaned and a brick may be selected which has a warmth of color that cannot be secured through any other medium.

THERE should be some dominant note in the garden which may be secured by the use of architectural features or the interpolation of flowers in the dominating parterre. Bird baths, seats and sundials may be used as accents in the garden as well as any other part of the grounds. Sundials have a charm which is indispensable and no large place is complete without one. There is a sentimental attachment which makes the sundial a welcome part of any garden, and the legend which they carry may turn a morning of work into one of pleasant thoughts. Bird baths are being used more and more and no more suitable location could be found than in the vegetable garden—there the birds which busy themselves in destroying the insects in the garden may come to drink and their presence will afford much company during the working hours. Seats should be located here and there in the garden in order that it may prove inviting and livable.

As cut flowers should be raised under vegetable garden conditions, there is no place more appropriate than along the paths in the vegetable garden and around the architectural features which are placed therein.

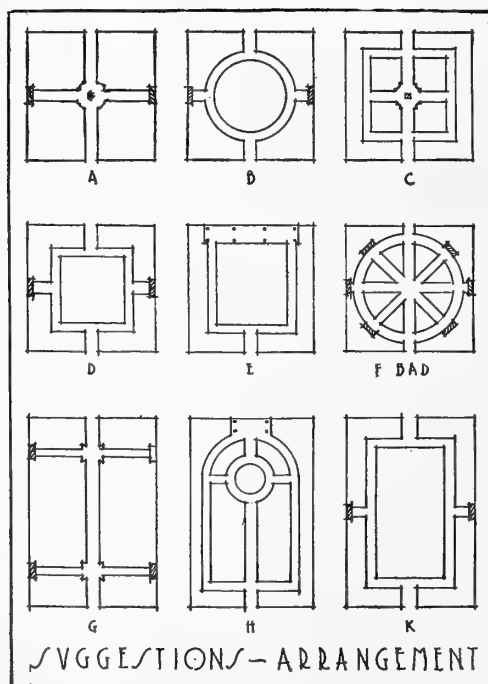
Location for the Vegetable Garden

ALTHOUGH the prime consideration in locating the vegetable garden is that a site be selected where there is an ample amount of sun and where the soil is suitable for a garden, there are many other points to be given consideration commensurate with their importance. The garden should be located as an integral part of the whole scheme of the home grounds and should be planned in connection with the garage and other service buildings if the place is a large one. Any



difference in grade may often be taken advantage of in locating the vegetable garden. The garden should be handy to the kitchen and yet not too close to the house.

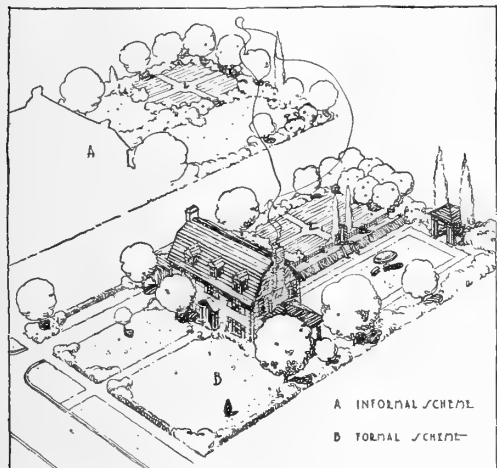
It is needless to say that the garden should be screened from the view of the public and even the neighbors, when such an arrangement is possible, whether the



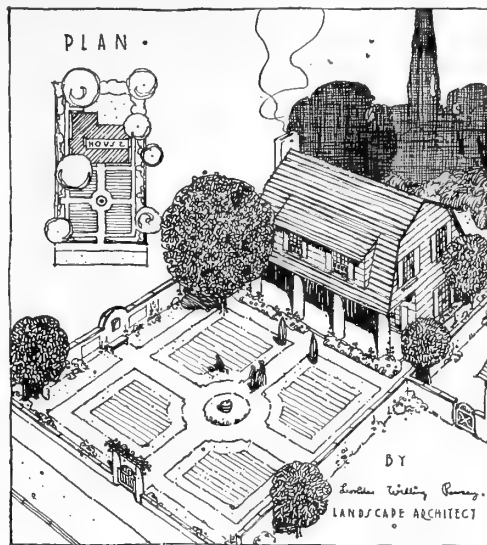
screen be a planting fence, or a building. Lattice fences and other architectural features are often used for a two-fold purpose, acting as a background to one area and as a screen to the garden.

A "Bit" for the children

THE new vegetable garden may not be father's garden alone, but may be used by the entire family, with a parterre reserved for each member. That children like to work upon an individual plot is shown by the success of the school garden; and with a parterre reserved for each in the home



The vegetable garden will fit into the general scheme of a very informal handling



The front yard garden need not be the usual object of derision

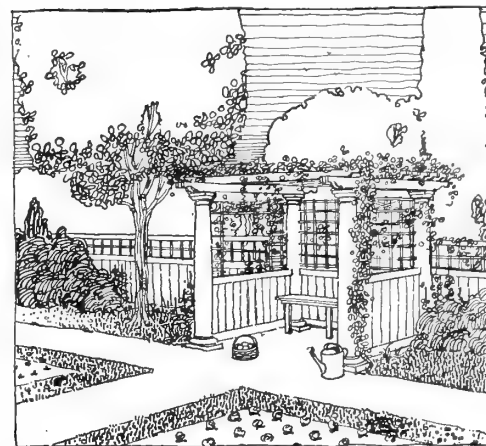
garden the child will cultivate a love for nature and for tidiness which will be invaluable, apart from the advantage of out-of-door work. The older people may have a parterre commensurate with their strength and ability, the careful working of which may add many pleasant years to their lives.

Gardens may be made which neighbors get together in maintaining and a similar scheme

may be worked out in such institutions as the old men's homes, private schools and orphanages.

Vegetables may be used for their foliage color, and plants such as horseradish, pie plant and asparagus where a denser foliage is desirable. Climbers may be used in a uniform manner, and trailers may be used for their peculiar advantage.

If these suggestions are heeded the vegetable garden should be an added feature to the attractive place apart from its tremendous importance at this time as a factor in the war and food crises.



Why not have a comfortable nook at one end or corner of the vegetable garden? Why not?

Flowers for the July Garden F. SPRING

Massachusetts

TAKE THOUGHT NOW AND PLAN TO HAVE BLOOM DURING THE PERIOD WHEN MOST GARDENS SHOW A LULL IN FLOWERS.—SPRING PLANTING FOR SUMMER BLOOM

EVERY one "running" a garden, large or small, has I suppose, the ambition to have an abundance of bloom during each and every month of the garden season. I had long realized that July was my sparse time and that my flower beds tended to "greenery" after the tide of the June color riot had ebbed.

"Why don't you go about to a lot of different gardens," suggested my gardener son, who, beside supplying us with all the vegetables in the seed catalogue, gives us many a lift in our own domain, "and see what you find in blossom in July?" I took his suggestion, and by finding a specialty here and a novelty there, to add to our own standbys, succeeded last year in making my garden look not only green, but gay, in July. The results I am going to "pass on" that they may be a little help to others in studying the spring catalogues and deciding on their plans for the year.

Japanese Iris is then at its best. To my mind no flower grown is so distinctly queenly and gorgeous. I have set a border of this at the front of my garden alternating with *I. sibirica* which blooms in late June running into early July, thus insuring a fairly long season of bloom. When the Japanese Iris is at its height,

one can only wonder—and admire! Every individual is beautiful and therefore one need not purchase named varieties unless a long purse allows. The "clumps" increase in size and luxuriance. My own border has been delighting us for many years. The English Iris (*I. ziphoides*) is mainly a July flower, following its enchanting Spanish relative which blooms in June. It is a bulbous Iris, most

charming and beautiful, of varied orchid-like colors. As bulbs are small and stems slender, it may be set, like the Spanish, thickly, between other plants which follow. We fill in spaces in front of and between our July Iris border, with dwarf Zinnias, Bachelor's Buttons, and Sweet Alyssum, to insure a gay succession until fall.

Roses. A few Ramblers, set around arches or pergolas, add much to the color and gay appearance of any garden. The blooming time of Crimson Rambler, Dorothy Perkins, and Baltimore Belle runs over into July. The standard Roses have had their splendid show, but many rare blossoms may be cut during July. Pansies, Violas, and Verbenas may be planted around them as a bed carpet.

Hollyhocks are distinctly July flowers, and nothing is more decorative and showy, massed in backgrounds, or against a gray stone wall—if you are fortunate enough to possess one. They soon grow shabby and must have as neighbors later blooming plants to fill in. The single ones are to my mind most beautiful. Hollyhocks are attacked by a fungus disease. Spray early with bordeaux mixture. Cover with manure in winter.

Lilies. Of these there are many



The Tiger Lily a feature. Marigold behind sundial with low annuals in front of them

to ornament and make fragrant the July garden, of which they are a distinct asset. *Lilium candidum*, the Madonna Lily, comes first to mind. I think there is no more enchanting combination than masses of its pure white blooms next *Delphinium*. Save your Easter Lily bulbs too and set them in the garden. The Tiger Lily with its old timey associations of humble country homes and deserted farm gardens, is a favorite of ours, and set where its gaudy coloring will not offend, is picturesque and effective. The Brown Day Lily (*Hemerocallis fulva*) is of the same class—rather coarse and common but effective as a “filler” and flourishing under any conditions. I once threw a clump on our compost heap and weeks after found it blooming gaily, not at all daunted! *Lilium auratum*—Gold-banded Lily is a gorgeous flower, to be cherished and admired—as the Madonna is to be loved. *L. speciosum rubrum* is another magnificent variety. The old-fashioned Lemon Lily (*Hemerocallis flava*) should always be included; blooming time extends into July, to be followed by the Yellow Day Lily (*H. Middendorfi*) paler, more delicate and slightly fragrant; both do well in partial shade. Two or three natives are “must haves”; superb—American Turk’s-cap Lily; canadense—the “Nodding Lily” of our childhood. *Lilium elegans* I prize greatly; its large orange-red clusters of blossoms are brilliant massed, hardy and increase in number each year. All Lilies require plenty of water and a winter mulch.

Delphinium is surely one of the finest of, not only the July, but of the entire season’s showing. If severely cut after blooming, a second flowering rewards us. Save seeds of the finest and start same season to tuck in bare corners; we can hardly have too many! Plant in numbers, to give broad masses of color. Put a few coal ashes over clumps when starting, to discourage white grubs. Stake early.

I love the whole family of Canterbury Bells. *Campanula carpatica*—both blue and white—is at its best in midsummer; and *C. persicifolia* (Peach Bells) both blue and white, gives wonderful color masses of great beauty. New blossoms appear through the entire season. There is a tall, delicate lavender variety that I prize greatly, and have never been able to name. It is a great “spreader” and beautiful picked. I once saw the entire altar, at the little Miracle Church at Ste. Anne de Beaupré, Canada, decorated with hundreds of its tall, ethereal, lavender spikes, and the beauty of the show has always stayed in my memory.

Perennial Phlox starts its gorgeous career in July, and is easily one of the best half dozen perennials. Keep to the brilliant, clear shades, and have plenty of white; divide every three years. Single side shoots removed in the spring will propagate fine varieties. Miss Lingard is an early

white variety that I prize highly. It flowers in spikes, freely and abundantly, and has beautiful glossy dark green foliage.

Foxgloves are one of June’s left-overs, but so decorative and ornamental that its late bloom should be encouraged by breaking off central stalk after too long an expanse of seeded stem appears. The pure white is most effective and beautiful. Encourage starting many of its thousands of self-sown seedlings,



Tall standard Heliotrope a feature on each side of upper steps. Snapdragons used freely, also blue Steptosolen in full bloom. Annuals on steps

for a great number fail to winter. Set where ice and water will not settle about them.

Blazing Star, if carefully set where its pinky-lavender hue will not clash with other colors, is a striking and individual addition to the July garden, with its long shooting sprays of bloom.

Bee Balm—*Monarda didyma*—will spread and flourish in hot corners, and its color is excellent, and that *Lychnis*—miscalled London Pride—an old-fashioned flower now in favor, of a fine, flame scarlet, is a favorite in our garden.

Sweet William continues to bloom, although



Hollyhocks a feature for the month. Phlox coming into bloom. Ribbon grass gives light touch. Annuals used in foreground

we have to cut it down before the season has far advanced. Shake out seeds liberally, and your border will be perennial. We had a gorgeous wide row of salmon pink (var. Newport Pink) this year, that was the glory of the garden. *Gaillardia*, *Perennial Coreopsis*, *Dianthus*, *Snapdragon*, all give bloom in July, and are satisfactory and valuable additions.

Balloon flower (*Platycodon*) with its gentian-blue bells is a favorite of mine; also *Hunnemannia*, a charming poppylike flower not much grown, with finely crimped yellow cups and lovely gray-green feathery foliage; beautiful for picking.

Before leaving the subject of perennials, I cannot too strongly urge careful cutting of all withered blooms. Amateurs often cannot realize what a vast difference this makes in the appearance and productivity of the garden. A second blossoming is thus given to most perennials, and blooming time of annuals indefinitely extended.

OF ANNUALS for July I shall not attempt more than to give a short list of my own favorites. July is the carnival of the annuals, which, if started early enough, will give a wealth of bloom, of every color and variety. Let me strongly urge getting annuals into early flowering. Those starred (*) in list below,

may with great benefit be started in the house very early in spring. [Practical detailed instructions for planting seed in the house or frame will be given in the February GARDEN MAGAZINE.] Others not having tap roots will gain in length of season if started in a simple cold frame.

Zinnias, both tall and of the charming new dwarf variety; Bachelor’s Buttons (Emperor William best); Poppies—of which have possible every variety both as to color and blooming time; Marigolds; Petunias; Nasturtiums; Verbenas*; Pansies*—including *Violas**, Annual Larkspur (new double, one of the best annuals grown and blooming until hard frost); *Salpiglossis*; Mourning Bride; Phlox Drummond; *Calendula*; Early *Cosmos** (beautiful set in Asparagus); Sweet Pea; Sweet Alyssum; *Streptosolen**, a charming low-growing blue flower seldom seen, especially lovely for rock-work.

A last word in reference to *work* in the July garden—stake all tall plants not already attended to; but remember early preparatory staking is infinitely more satisfactory than late compulsory attention.

The load of wood from the woodlot that is burned in your home this winter will not only keep you warm, but will also release some coal for another family that might suffer without it. The ring of the axe in the woodlot will mean less suffering from cold in the tenements. As a duty to our country let’s use the fuel furnished by the country side.

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Getting a Running Start

THIS is the month of preparation: choosing the garden site, planning the garden on paper, ordering the seed, mending the tools, making stakes, etc.

If the agricultural lime was not put 'no in the fall it should be spread on the ground now, so that it can be washed into the soil. Deep plowing in the fall and a covering of lime helps to liberate the potash already in the soil and make it available for new crops.

Choosing the Garden Site

A SOUTH-EASTERN exposure is preferable with the rows running north and south. A garden should be no larger than is really necessary to supply the needs of the family, or to be kept in good order through the amount of labor one can command. Especially in this year of stress. Much can be done on one-tenth of an acre, and a backyard garden measuring 30 x 40 feet will feed a family of four, with judicious management of rotation of crops; though this does not allow for staples such as potatoes and cabbages for winter storage.

Planning the Garden on Paper

DRAW the garden to scale, i.e., in your plan let a half inch or a quarter of an inch represent a foot. Apportion a part of the garden for small fruits, and also for perennials or permanent crops, so they can remain undisturbed while the other crops which quickly come to maturity can be planted in rotation.

Put the permanent garden at the furthest end; and the herbs nearest the house, for convenience. The next nearest space lay off for the ever changing crops, designated under the head of annuals. Thus the raspberries and blackberries and dewberries could be planted at the furthest end and trained to a fence or tied to stakes. Then plant gooseberry and currant bushes, and then a row or two of strawberries. Have the asparagus bed next and then a row of rhubarb. The long season crops are next in order; these are salsify, carrots, parsnips, and onions.

Of the other vegetables such as beets, peas, snap beans, butter beans, potatoes, tomatoes, squash, cucumbers, etc., there should be continuous plantings, following each other in rapid succession, and these crops should be planted where they are easy of access on account of the constant manuring and cultivating and rotating of crops.

After planning the garden on paper this plan will serve as a guide all season and should be kept ready to hand to refer to constantly.

Ordering the Seed

GET busy at once. (1) Send for catalogues of reliable seedsmen; (2) make out your order; and (3) send it off as soon as possible. If a garden calendar or diary has been kept as has been constantly advised in these columns, refer to the notes now and make a careful list of those vegetables that have proved satisfactory, with the amount of seed needed. Be certain to order enough for

(Continued on page 206)

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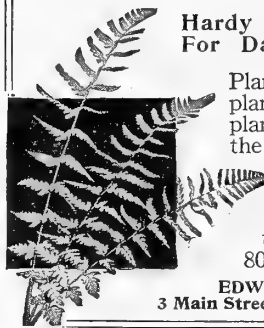
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It's not the energy you use or the time that you spend that counts. It's the results you get. You can do a bigger "bit"—raise more food—with less work if you have the right tools. The easy-running push-ahead-a-step-at-a-time

IRON AGE Garden Tools

solve three big present-day problems. They help lower the "high cost of living," provide plenty of fresh vegetables and release food for our brave boys in khaki.

Our No. 306, shown above, is an especial favorite of the home gardener. It will open its own furrow, sow in continuous rows or in hills, cover

the seed with loose soil, mark the next row and pack the soil with a roller—all in one operation. Later, you can easily change it to a wheel hoe. It will then hoe, open furrows, level and fine your soil, ridge growing crops, cultivate, etc.

Iron Age Garden Tools are made in 30 combinations and at prices from \$4.50 to \$30. Also Spraying, Potato and Cultivating Machinery.

Write to-day for booklet—free, of course

BATEMAN M'F'G CO. BOX 35-C
GRENLOCH, N. J.
82 Years in Business

From Your Own Rose Bushes

What infinite satisfaction there is in adorning the home with roses selected from one's own rose bushes! You can readily have a profusion of lovely roses. Our

1918 FLORAL GUIDE

lists and describes nearly 400 "Best Roses for America"—varieties for every purpose. Carefully grouped to make selection easy and certain. Contains 84 pages, profusely illustrated. Sent with instructive booklet "How to Grow Roses" and a 25c return check good on your first \$1 order. All for 10c. Send to-day. It pays to have your own roses.

CONARD ★ ROSES
& JONES CO., Box 24, WEST GROVE, PA.
ROBERT PYLE, Pres. A. WINTZER, Vice-Pres.
Backed by 50 years' experience

The Cloche Co.

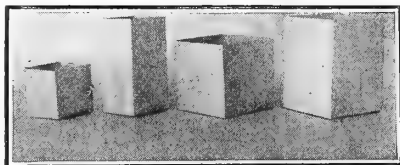
C. H. Allender, Mgr.

Begs to announce the removal to more commodious quarters at

**37 Warren Street
New York City**

Order Your Paper Pots Early

No increase in price, while present stocks last.



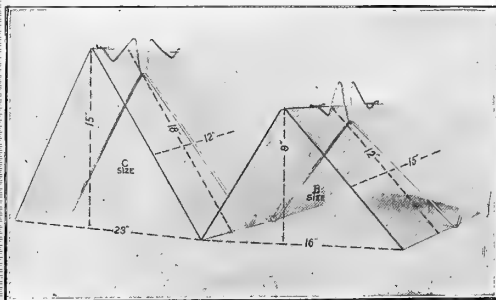
2 x 2 4 x 2 3 x 3 4 x 3

Make gardening a pleasure and a success. When it is time to set your plants out of doors you simply plant the pot in the ground and it rots away. Set your "Groquik" Forcers over them and you will have the finest results—4 to 5 weeks ahead of the ordinary method.

	Per 100	Per 1000
2 x 2 size—for all small Plants...	\$.75	\$5.00
4 x 2 size—for Sweet Peas only..	1.00	6.00
3 x 3 size—for Tomatoes, Melons, Cucumbers, etc.....	1.25	6.50
4 x 3 size—for Corn, Beans, etc..	1.50	7.00

Every Seed Means a Plant!

"Groquik" Forcers

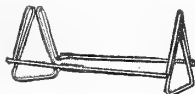


SIZE C
\$16.00 per 100

SIZE B
\$10.50 per 100

Glass extra. Smaller quantities can be had. Send for price list.

Single Wire Forcers



as shown alongside, are assembled by simply inserting the glass in the side loops. Any size of glass can be used.

Sample on receipt of 15c
Wires only, per dozen..... \$ 1.50
Wires only, per 100..... 11.50

This is the N. Y. Division Selling Agency of The Skinner Irrigation Co. Stock of Fittings, etc., always on hand.

(Continued from page 204)

the whole season. It is better to order too much than to under-order, but don't be wasteful—good seed is scarce. Order only from reliable firms. Labor is too valuable now to throw time away in planting poor seed. Get the very best. Plant prolific types, as quantity is a factor now. Try a few new and well recommended varieties, but for the main crops stick to the well tested varieties. Below is a list of vegetables that have proven of fine quality and suitable for the home garden in this section.

- ASPARAGUS: Giant Argenteuil.
- BEANS: Burpee's Stringless Green-pod Bush-bean; Early Valentine (Red); Kentucky Wonder (Climbing); Fordhook Bush Lima; Southern Butter-bean (Pole); Burpee's Giant Podded Pole Lima.
- BEETS: Bassano; Extra Early Egyptian; Eclipse.
- CHARD: Lucullus.
- BRUSSEL'S SPROUTS: Burpee's Danish Prize.
- CABBAGE: Early Jersey Wakefield; Succession; Early Flat Dutch; Autumn King.
- CARROTS: Chantenay.
- CAULIFLOWER: Burpee's Dry-weather.
- CELERY: Golden Self-blanching; Winter Queen.
- CORN: Golden Bantam (early); Adams Extra Early; Howling Mob; Country Gentleman; Stowell's White Evergreen.
- CUCUMBERS: Davis, Perfect; White Spine.
- EGGPLANT: Black Beauty.
- ENDIVE: White Curled.
- KALE: Dwarf Scotch.
- LETTUCE: Burpee's Way-ahead; Big Boston; May King; Dwarf White Heart Cos.
- MUSK MELON: Netted Gem.
- WATERMELON: Florida Favorite.
- OKRA: White Velvet.
- ONIONS: Silver King; Potato onion; Yellow Danvers; White Queen; Prizetaker.
- PEAS: Burpee's Extra Early; Alaska; Telephone; Nott's Excelsior; Champion of England; Black Eyed Peas.
- PEPPERS: Chinese Giant; Neopolitan; Ruby King; Tabasco.
- PUMPKINS: Jumbo King.
- RADISHES: Scarlet Button; White Icicle.
- RHUBARB: Wyatt's Victoria.
- SALSIFY: Sandwich Island Mammoth.
- SQUASH: Victoria.
- SQUASH: Early White Bush; Golden Crookneck.
- TOMATO: Chalk's Early Jewel; Sparks' Earliana; Brimmer; Bonny Best; Success; Stone; Matchless.
- TURNIPS: Purple Top; Norfolk (for salad).
- POTATOES: Early Rose; Eureka Extra Early; Irish Cobbler; Green Mountain.

Early Planting

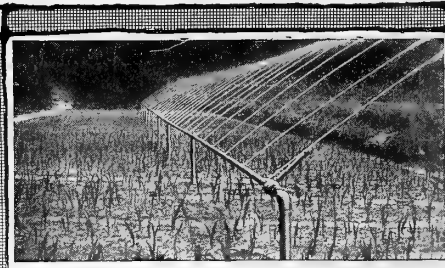
PLANTING does not form a conspicuous part of the work for this month. But during the fine weather it is a good month to plant an asparagus bed; also as peas are a cold weather plant the smooth varieties of garden peas can be sowed the first and the middle of the month. Sweet peas should also be sowed now. Make a trench two feet deep, put in it six inches of well-rotted cow manure, and over this a four inch layer of good garden soil, on this sow the seed, and cover with three or four—inches of soil. As the plants appear gradually fill in the trench. This makes them deep rooted and able to resist the intense heat, and with a little mulching of leaves or grass clippings the sweet peas will bloom for a much longer period. Peas and beans and all plants of the leguminous kind will give a bigger yield if the seed is inoculated before planting. There are good methods of inoculation that have been advertised in the columns of this magazine from time to time.

Begin to Spray

THE orchard should be looked after now and then and if there is any appearance of San José scale or oyster scale the trees should be sprayed with lime-sulphur wash several times during the winter. If the trees were not pruned in the fall they should be pruned now before the sap rises in February. Do not trim any of the early blooming shrubs at this time; such as Lilac, Forsythia and Spiraea.

(Continued on page 208)

The Readers' Service will gladly furnish information about Gardening



Water Your Garden The Skinner System Way

HOSE watering means too much in some spots, too little in others; none at all in still others. Also means a lot of bother and trouble.

Water your garden the Skinner way. The Skinner System waters thoroughly and uniformly. The water falls in a gentle rain that will not harm tender plants or pack the soil.

For \$18.75 you can have one of our complete Portable Watering Lines, 50 feet long. It waters 25 feet on each side of it. Equipped with quick, easy working couplings. Pipes galvanized. Nozzles are brass. Nothing to get out of order. Our 100 feet line costs \$36.25. Prices on other lengths proportionate.

Write for catalogue. Also ask us about our new Automatic Oscillator; a little device that makes it possible for you to turn on your water and forget it, knowing that it will be shut off automatically when your garden has been satisfactorily watered.

The Skinner Irrigation Co.

219
Water
St.

Troy
Ohio



A Green Lawn in Dog-Days Had a Good Start in Spring

The first few weeks in spring "set the style" for your lawn. Rich green grass in mid-summer means that you fed the roots in spring with a fertilizer that the plants could take up quickly and readily.

Takoma Odorless Lawn Plant Food

makes green healthy grass; is clean, absolutely odorless, and easy to handle; costs less than other fertilizers, because you use less.



"The Maintenance of Lawns," gives full instructions for making new lawns and renovating old ones.

Send for a copy

Odorless Plant Food Co.

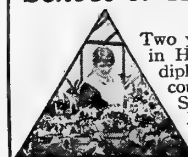
1317 New York Avenue
Washington, D. C.

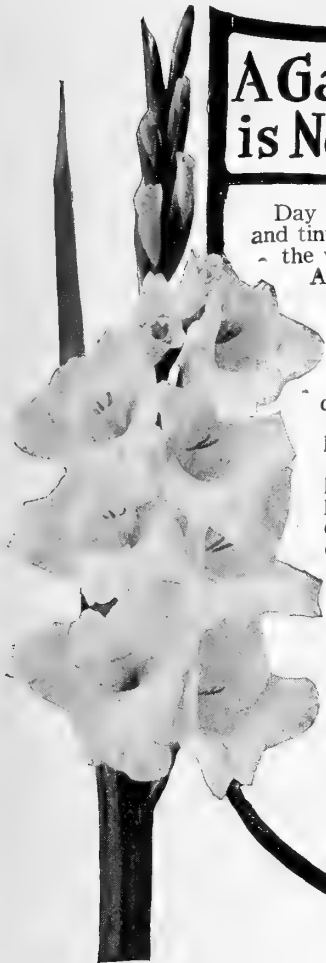
School of Horticulture for Women

AMBLER, PA.

Two years' practical and theoretical course in Horticulture. Next entering class for diploma students January 15, 1918. Fall course of ten weeks for amateurs begins September 11th. Write for particulars. Early registration advised.

Elizabeth Leighton Lee, Director, Box 105





A Garden of *Gladioli* is Never Monotonous

Day by day new beauties unfold, new shades and tints appear, until you begin to think that the whole range of colors has been covered.

And these experiences will come to everyone who begins a garden of Gladioli this year.

Here are **ten varieties**; the kinds an expert might choose, that will start such a garden for you. They will begin blooming in early summer and will continue until frost.

- | | |
|------------------------------|--------------------------------------|
| Mary Fennell. Deep lavender. | Golden West. Orange Goliath. Violet. |
| Dawn. Rich pink. | Pink Perfection. Pink. |
| Europa. Snowy white. | Princes. Scarlet and white. |
| Canary Bird. Yellow. | Victory. Sulphur yellow. |
| Clarice. Pink. | |

One Bulb of Each Variety, \$1 Postpaid

(I have a plan whereby you may get twenty-five bulbs for almost nothing. Ask me.)

My 1918 "Glad" Catalogue is free to all readers of this magazine. Write for it to-day.

JELLE ROOS
BOX B
MILTON, MASS.

DREER'S Garden Book 1918



will help you wonderfully to reduce the high cost of living. It is read by tens of thousands; professionals as well as amateurs as

An Authoritative Guide

to all garden work, both for Vegetables and Flowers.

256 pages, four full page color plates, and four full page duotone plates, and hundreds of photographic illustrations.

It lists all dependable varieties of vegetables, as well as the worthwhile novelties.

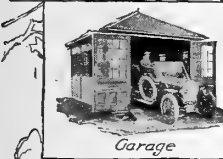
A copy free if you mention this magazine

HENRY A. DREER
714-16 Chestnut St., Phila.

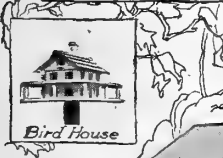
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Play House



Garage



Bird House

HERE is the Hodgson way. All Hodgson Houses are first thoughtfully planned. Then each individual part is carefully made of best lumber—finished, fitted and painted. After which the house is completely erected at the Hodgson plant.

When you buy—your house is shipped in sections which can be put together by unskilled workmen quickly and you have a house exactly like the one you selected from the Hodgson catalog. And at exactly the same price.

Hodgson Portable Houses include: bungalows, garages, cottages, poultry houses, play houses, dog houses, and many other kinds.

If you order now, and pay 25 per cent of the price of your house we will prepare and hold it until wanted. Send for catalog to-day.

E. F. HODGSON CO.
Room 228, 116 Washington Street, Boston, Mass.
6 East 39th Street, New York City



Cottage



Plan Now for Your Spring Vegetable Planting

YOU will find just the helpful information you need in this new and different magazine for the garden enthusiast. It teaches the planting and growing of vegetables in the home garden. Plain, truthful, understandable advice about vegetable planting and growing is found each month in

VEGETABLE LORE

A Magazine for the Benefit of the Amateur Gardener

What to Plant—How to Plant—What Seeds to Buy—it tells about just these things, expertly but in plain words. Vegetable Lore teaches thorough cultivation. The cooking of vegetables is also covered. Vegetable growing is a patriotic duty and necessity. Full value to subscribers guaranteed in excess of claims or money refunded. Issued once a month—\$1.00 per year.

Send for Sample Copy. Edited and Published by

MAURICE FULD

1457 BROADWAY

NEW YORK

Garden Roses

IN Hardy Roses, we catalogue this year over one hundred and twenty-five of the best varieties for the American garden.

These are shipped to us direct from Hugh Dickson, Ltd., the wonderful Rosarian of Belfast, Ireland, whose Agent we are in America.

This year the supply is limited and in order to guarantee satisfaction and delivery, we ask our customers to let us know in good season what they want.

Standard Varieties: 60c per plant; \$6.00 per dozen, f.o.b. Madison.

All Freight and Customs Duties Paid.

Hugh Dickson's Novelties for 1918

and the best of the world's Novelties from other raisers, all fully described in our 1918 catalogue.

If not a customer send us your name and address for our mailing list.

**Charles H. Totty
Company**
MADISON NEW JERSEY

(Concluded from page 206)
Growing Crops

KEEP the lettuce beds going to have succession crops all winter. Give air to the frames every day by lifting them slightly, also water the lettuce only in the mornings. Seed for new crops could be easily sowed in a box in a sunny window to be transplanted later in the cold-frames or as spring advances in the open ground. When the plants are young they should be sprayed thoroughly with bordeaux mixture with arsenate of lead as a preventive against wilt and insects.

The conservatory and the greenhouse have their enemies in the way of insects and fungous growth. Keep the plants healthy by giving them plenty of air, even on the coldest days just so the air does not blow directly on them. Water them thoroughly and avoid a light sprinkling for in this way the roots of the plants do not get wet and they will sicken and die.

Mending the Tools

DURING the inclement weather, all tools should be thoroughly overhauled and put in good condition so as to be ready for the early spring rush. Individual, small cold frames can be made now. See directions in GARDEN MAGAZINE, January, 1916. They come in well in the early spring to put over plants that have been set out in the open ground and which should be protected at night from the cold and with a glass cover or even cheese cloth they will be much sooner brought to maturity, and thus earlier vegetables will be secured.

Begin now to keep a garden calendar or diary.

VIRGINIA

J. M. PATTERSON.

COMING EVENTS CLUB & SOCIETY NEWS

Meetings and Lectures in January

(Following dates are meetings unless otherwise specified)

1. Garden Club of Pleasantville, N. Y.
3. Marshfield, Mass., Garden Club.
4. Pasadena, Cal., Horticultural Society.
5. Lake Geneva, Wisc., Gardeners' & Foremen's Association.
7. Garden Club of Larchmont, N. Y. Meeting and Lecture.
8. Maryland Garden Clubs of America, Maryland Council of Defence, Women's Section, Arundell Club Hall, Baltimore, Md. Lecture: Selection of Varieties for Garden Use.
9. New Bedford, Mass., Horticultural Society.
9. Valdosta, Ga., Floral Club.
9. Lenox, Mass., Horticultural Society.
11. Nassau Co. Horticultural Society, Glen Cove, L. I. Westchester, N. Y., and Fairfield, Conn., Horticultural Society.
12. Connecticut Horticultural Society, Hartford, Conn. Dobbs Ferry, N. Y., Horticultural Society.
12. Massachusetts Horticultural Society, Horticultural Hall, Boston. Inaugural Meeting Exhibition.
14. New York Florists' Club, New York City, N. Y. Garden Club of New Rochelle, N. Y. Rochester, N. Y., Florists' Association.
14. Park Garden Club, Flushing, L. I.
15. Gardeners' & Florists' Club of Boston, Mass.
16. Rhode Island Horticultural Society, Prov., R. I. Tarrytown, N. Y., Horticultural Society.
17. Salisbury, Conn., Garden Club, Subject: Kitchen Herb Garden.
17. Marshfield, Mass., Garden Club.
18. Dahlia Society of California, San Francisco, Cal. Pasadena, Cal., Horticultural Society.
19. Lake Geneva, Wisc., Gardeners' & Foremen's Association.
22. Maryland Garden Clubs of America, Maryland Council of Defence, Women's Section, Arundell Club Hall, Baltimore, Md. Lecture: Propagation of Early Garden Vegetables.
23. Short Hills, N. J., Garden Club. Public Lecture.
25. Connecticut Horticultural Society, Hartford, Conn.
26. Dobbs Ferry, N. Y., Horticultural Society.
28. Park Garden Club, Flushing, L. I.
- 30-31. Massachusetts Horticultural Society, in conjunction with the Annual Meeting of the American Carnation Society, Horticultural Hall, Boston. Carnation Exhibition.

American Nursery Co's New Year's Message

To provide the best ornamentals which ideal soils, climate, and human skill of a high degree can produce, is the mission of our organization. Whether your plans call for a few rare plants only or the entire planting of an estate we stand prepared to supply your wants.

This is a Year for Deliberate Planning

Guesswork in gardening will be replaced by definite ideas, to assume tangible shape only after mature deliberation. Permanent gardens will receive more attention than ever before. While you plan yours, we invite you to consider our

800 Acres — 127 Years of Faithful Service

Our nurseries, two of the largest and most complete in the country, put their resources and experiences at your disposal. For 127 years, the Bloodgood Nurseries of Long Island have served a most critical clientele. For many years the F. & F. Nurseries of New Jersey have worked along similar lines with gratifying results. The American Nursery Company, as the combination of these two well-known leaders in the nursery world, solicits your favorable consideration.

Treatise on Evergreens and Catalogue FREE

It is none too early to write for both. The more chances you give us to aid you in your selection, the easier it will be for us to meet your requirements. It is our business to serve planters with the Best that money can buy in Nursery Stock for permanent results and lifetime pleasure. May we serve you?

AMERICAN NURSERY CO.

Incorporated

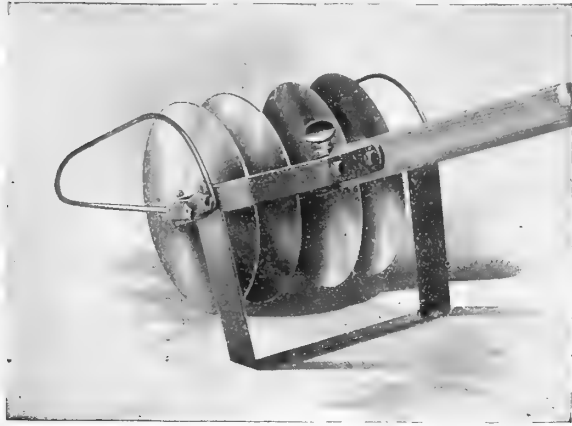
Singer Building New York

Farr's Hardy Plant & Specialties

—is a book of 112 pages, 30 of which are full page illustrations (13 in natural color). It is really a treatise on the hardy garden, containing information on upward of 500 varieties of Peonies (the most complete collection in existence), Lemoine's new and rare Deutzias, Philadelphus and Lilacs, and the Irises (both Japanese and German) of which I have all the newer introductions as well as the old-time favorites.

Garden lovers who do not have the Sixth Edition may secure a complimentary copy if they send me their name and address.

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Wyomissing Nurseries Co.
104 Garfield Avenue, Wyomissing, Pa.



Gardening Efficiency

Is largely a matter of correct tools for different purposes. After the garden is made, results depend mostly on cultivation. It kills weeds, aerates the soil and conserves moisture. All this is done in the *easiest* manner with the

PERFECTION GARDEN CULTIVATOR

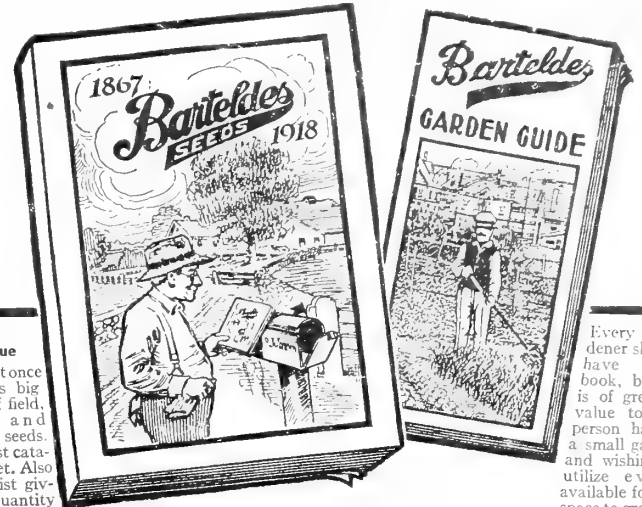
The lightest cultivator on the market, hence easy to operate. A perfect machine to do the job of cultivating completely; it cuts the weeds, pulverizes the soil, throws the soil to or from the rows. Leaf-lifters prevent injury to plants. A simple change of bolts automatically adapts the machine to shallow or deep cultivation, deep for use on loam or shallow cultivation on heavy clay. Of simplest construction and strongest workmanship.

Any of 3 Sizes \$3.50 each

- No. 1, with two discs, on which 6 inch or 7 inch knives may be used, will work rows, 9 to 11 inches wide.
- No. 2, with four discs, for use with 7½, 8½ and 8¾ inch knives, will do the work between 11 to 14 inch wide rows. The best size for general work.
- No. 3, with four discs, and 10 or 11 inch knives, works 13 to 16 inches wide.

Satisfaction guaranteed or money refunded. Order to-day—don't fight weeds the old-fashioned way. Descriptive circular free, as is also our catalogue of seeds for present planting.

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Free Catalogue
Write at once for this big book of field, garden and flower seeds. The best catalogue yet. Also Pink List giving quantity prices of all field seeds.

Every gardener should have this book, but it is of greatest value to the person having a small garden and wishing to utilize every available foot of space to greatest advantage

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Send Coupon or Post Card To-day

THE secret of successful gardening is in the quality of the seeds, combined with the knowledge of how to prepare the soil, how to plant the seed and how to care for the crop. Barteldes Seeds are selected, tested and backed by over 50 years' experience. Big packets, plump healthy seeds, lowest prices. The Barteldes "Garden Guide" tells you "How to prepare the soil," "How much seed you need for a family of four," "How to plan your garden for succession crops," "How to get vegetables early," "How to store vegetables for winter use" and many other things of value.

This Catalogue and "Garden Guide" are both free. Send at once

THE BARTELDES SEED CO. 310 Massachusetts St., Lawrence, Kans.
310 Sixteenth St., Denver, Colorado
(Over a Half Century of Honest Service) 310 Main Street, Oklahoma City, Okla.
Write to the House Nearest You

My Superb Silver Trophy Strain.

"The Glory of the Garden"

is the name I give to my choice Gladioli. *Peace*, the grandest white variety; *War*, a deep blood red sort, and *Prosperity*, with its wonderful markings of light rose, madder lake and chamois yellow, with long, slender anthers of purple violet, all have their devotees, for the long upright spikes of large blooms are a delightful sight nearly all summer.

Blooms All Summer Through

In a short time after the bulbs from Meadowvale Farms are planted the stiff, upright spikes will be loaded with lovely flowers of white, red, blue in dozens of tints and shades. "The Glory of the Garden" it really is. My handsome brochure will tell you more about the Gladiolus; your name and address will bring you a copy FREE.

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Grow Your Own Fruit

At a slight initial cost, with a minimum of attention, and with practically no running expenses, your home-plot can easily supply you with delicious, perfect fruit in season. Pears, Peaches, Quinces, Apples, Grapes, Berries, in fact, all

KELLY BROS.

fruits will thrive and bear rapidly and bountifully. The strongest kind of a guarantee is your protection against inferior stock. Our nursery, established in 1880, is famous for hardy fruit trees, as well as choice collections of ornamentals. Our prices permit a considerable money-saving.

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FLOWER gardens in these war times must meet the needs of the Nation's soul as well as of its body. Never was the Country in greater need of flowers and trees and growing plants to delight the sight and lift the thoughts and cheer the heart. Plan and plant with a flower lover's instinct.

Wagner's Flower Catalogue

The annual number is now ready with valuable suggestions to guide you in the selection, planting and care of roses, hardy flowers, shrubs, evergreens and trees for every decorative purpose. This book will be mailed to you without cost or obligation, bringing with it the assurance of success with things that will make your surroundings a place of delight. Write today for Catalogue 76.

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WAGNER LANDSCAPE SERVICE Plans and executes the landscape work for private homes, estates, clubs, etc., and for public institutions, schools, hospitals, and manufacturing plants. Correspondence direct with our Landscape Department is invited.

Farquhar's Pot Grown Strawberry Plants

Plant early for full crop next year.

Write for copy of our Summer Catalogue containing full list of varieties.

R. & J. Farquhar & Co.
9 S. Market St. Boston, Mass.



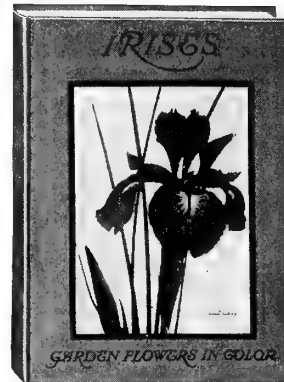
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THE finest pansy strain in the world. Separate colors. A marvelous number of new shades and varieties and of great size—up to 3 in. in diameter. Seed is not plentiful.

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Pure-Bred Day-Old Chicks

Buy from the world's largest producers. The Pittsfield strain is nationally known for vigor and heavy laying in Barred Rocks, White Rocks, White Leghorns, Rhode Island Reds and White Wyandottes.

Prices based upon immediate acceptance. If prices drop we will give you the advantage. Great chick shortage, yet the Government says raise and eat more poultry. Order early.

Safe Delivery Guaranteed. Write for prices and circulars. Send 2c stamp for "Feeding and Care of Chicks."

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282 Main Street Holliston, Mass.

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of insects and worms in our garden—"Over there somewhere" place your "relief canteen" for the birds. Suet and grain for these efficient soldiers early and late at their posts! Let the first scout "over the top" see your weather cock feeding shelf and he and all his kin enlist for joy to save your trees and crops for the World Democracy to enjoy.

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Send \$1.00 for our booklet "Fear of Color, Fear of Plants, Fear of Plants as Weeds." Will revolutionize the growing of vegetables, increase production, impel much greater consumption of vegetables. Sow seeds and plant sets in wide rows, wide beds. No hand weeding, no hand thinning, earlier maturity, better quality, 2 to 4 fold greater yield, less than half the usual labor. Onions, carrots, beets, etc., 1,500 to 2,000 bus. per acre. With special tools, triturate your garden soil before and after planting, enabling the soil to absorb from the air and yield to the plants ten fold more nitrates. The tools, \$1.00, \$1.25, \$1.50 each. The set, \$3.50. Cuts mat showing tools free. By our new methods of training and pruning, the tomato plant is compelled to adapt itself to a short season, mature and ripen its fruits 4 to 5 weeks earlier from usual time of planting.

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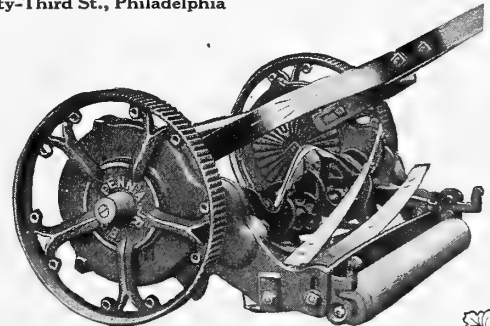
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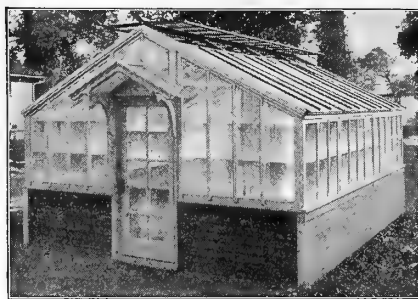
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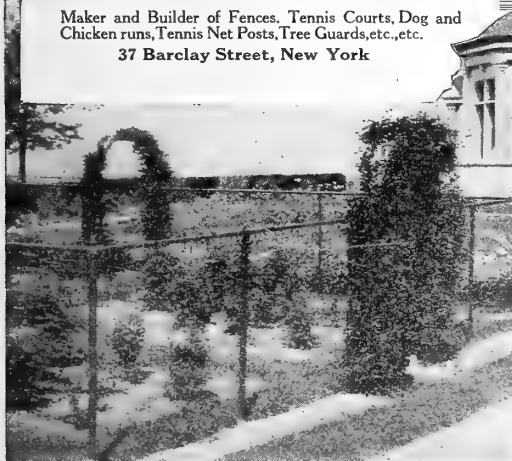
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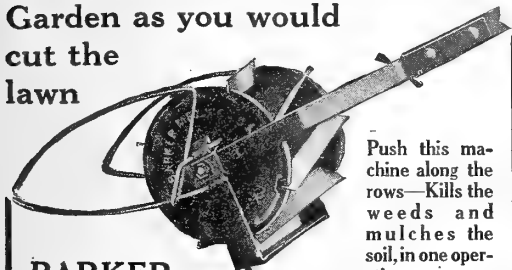
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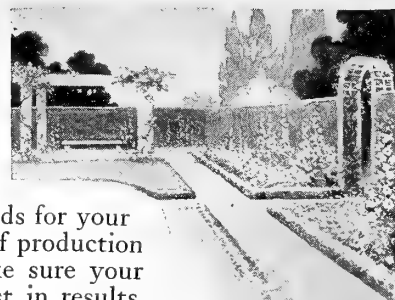
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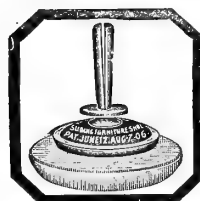
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Drawn by one horse and operated by one man, it will mow more lawn than any three ordinary horse-drawn mowers with three horses and three men.

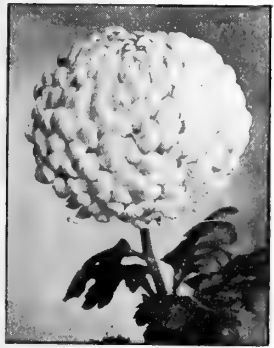
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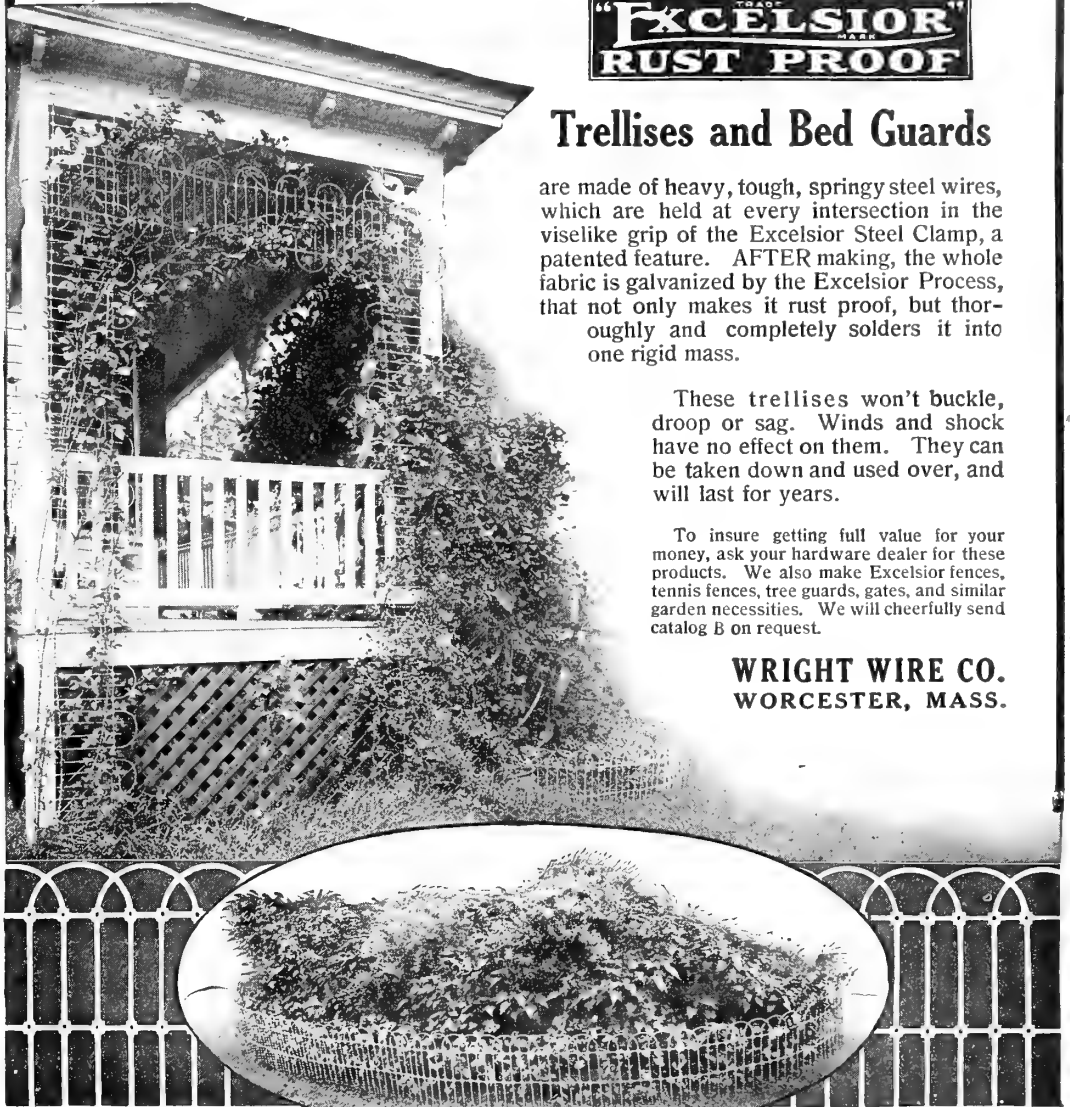
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You can get fine results from this pedigree seed because every lot is tested and the percentage that will grow is marked on the label. So you know just how thick to plant.

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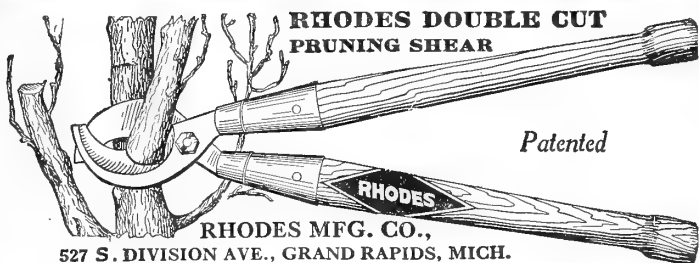
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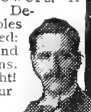
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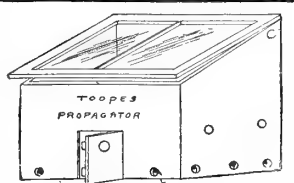
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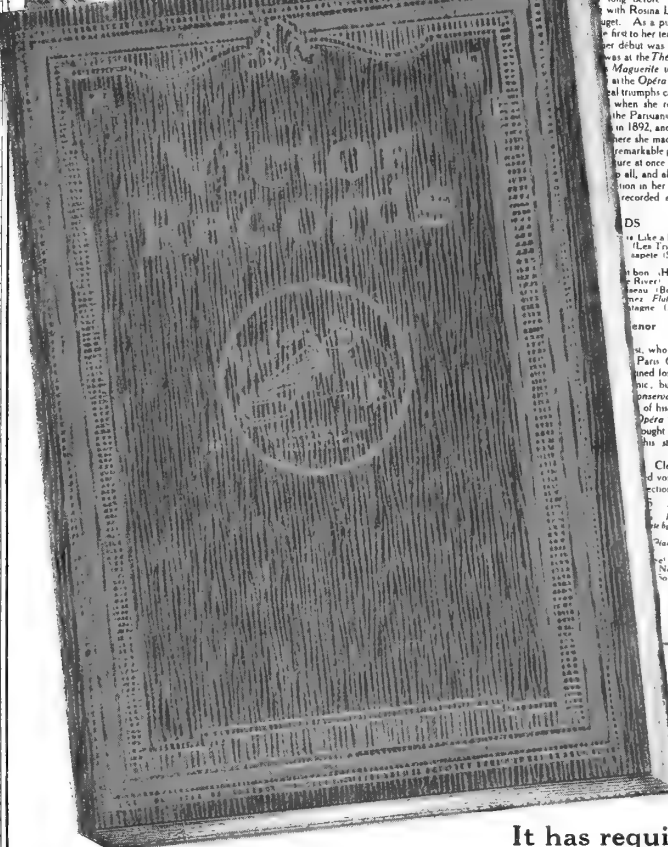
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VICTOR RED SEAL RECORDS

Ca
CALVÉ, EMMA, Soprano *Kahl-ré-eh*
Emma Calvé, half French, half Spanish, is descended from a progressive and cultured family. She was born in the young girl knew that she must play a serious role than that of a society belle. Her dark-eyed beauty and long before she met her husband, with Rosa Laborde, and afterward. As a pupil the young girl entered first to her teachers, and made rapid progress. Her debut was made at Nice, her first was at the Théâtre de la Monnaie, in Brussels, where she performed *Marguerite in Faust*. Her Paris debut was at the Opéra Comique, in Châtelet. Her first triumph came in Italy, where she was when she reappeared in Paris as the Parvaneh, made her first idol in 1892, and Americans first heard her at the Metropolitan Opera house she made her debut in 1894, and her fame spread rapidly. Her remarkable gifts as an actress, her beauty and magnetic personality, her force and accuracy, all, and although she spends most of her time in Europe, her reputation in her Victor records.



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Ca
CARUSO, ENRICO, Tenor *Kah-roo-eh*
Caruso's success is the greatest ever attained by an artist in this country. His American engagements have been a continuous evolution, the great audiences being held spellbound by the exquisite refinement, beauty and power of his voice.
Caruso is a native of Naples and was born in 1873. When he was a mere boy he sang in the churches of Naples, and the beauty of his voice arrested the attention of all who heard it. His father did not encourage the boy at first, but a few years later was persuaded to allow him to take a few lessons in singing. The family was very poor, however, and Caruso was forced to work as a mechanic. This work not being very profitable, he began to seriously consider whether he could not make more by singing than he could earn by hard work with his hands.



CARUSO

He was eighteen years old when he met a distinguished baritone singer, who, after hearing his voice, decided that he would give Caruso substantial assistance. He therefore took him to Maestro Verigne, who was captivated by the beauty and purity of his voice, and began to give him vocal instructions.
Caruso made his debut in 1894 in Naples, in a now forgotten opera, *L'ancora Franco*, afterward singing in various Italian cities and in Cairo. A South American engagement followed, and on his return, after a season in Milan, it was clear that here was one of the most promising young tenors ever heard in Italy. Caruso had made a success in various countries of Europe before coming to America in 1903, but it was his performance of the Duke at the Metropolitan on November 23d of that year which convinced opera-goers that the greatest of all tenors had arrived.
Caruso has made records exclusively for the Victor since 1903, and as the present contract with the tenor does not expire until 1933, the public is assured perfect reproductions of his voice for many years to come.

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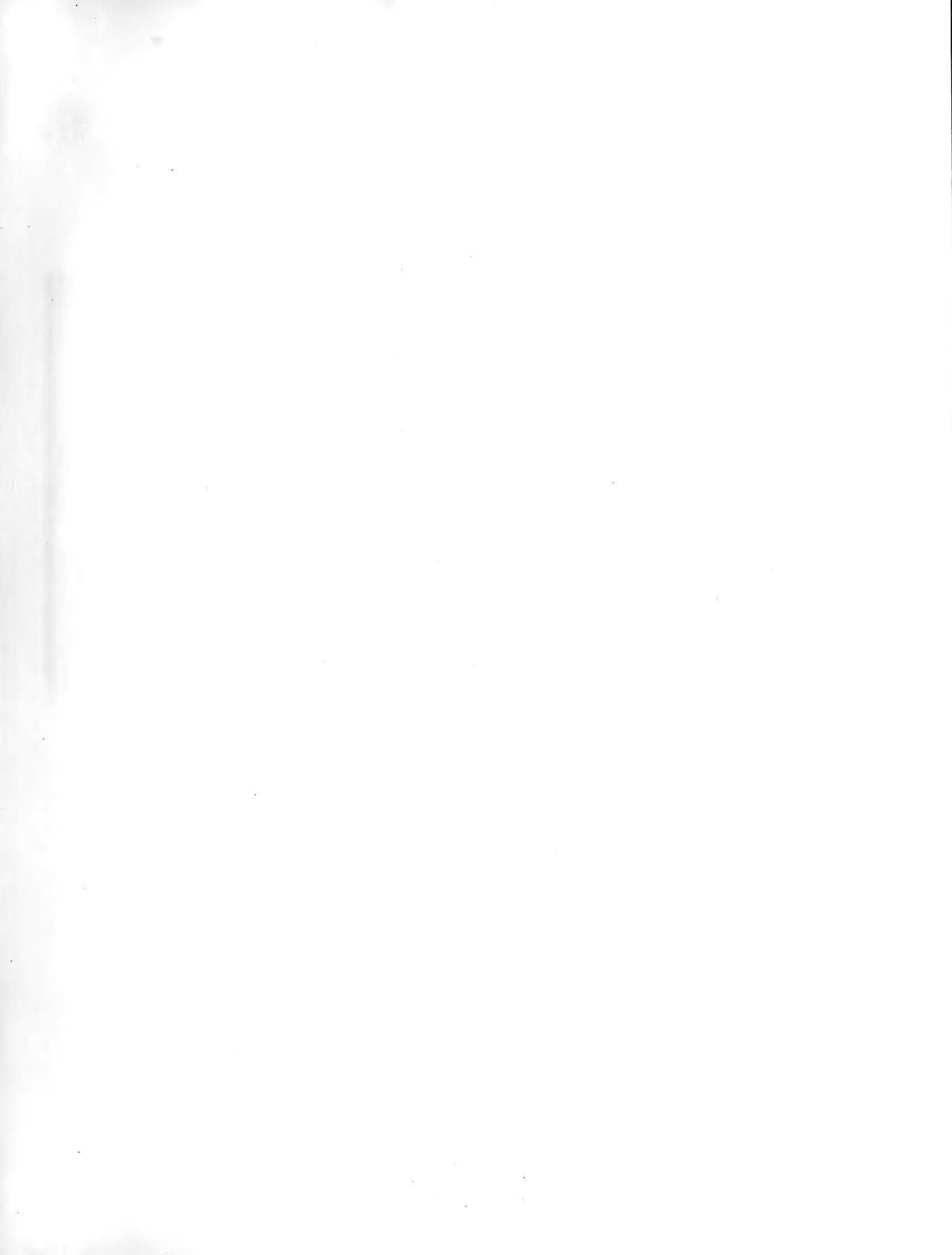
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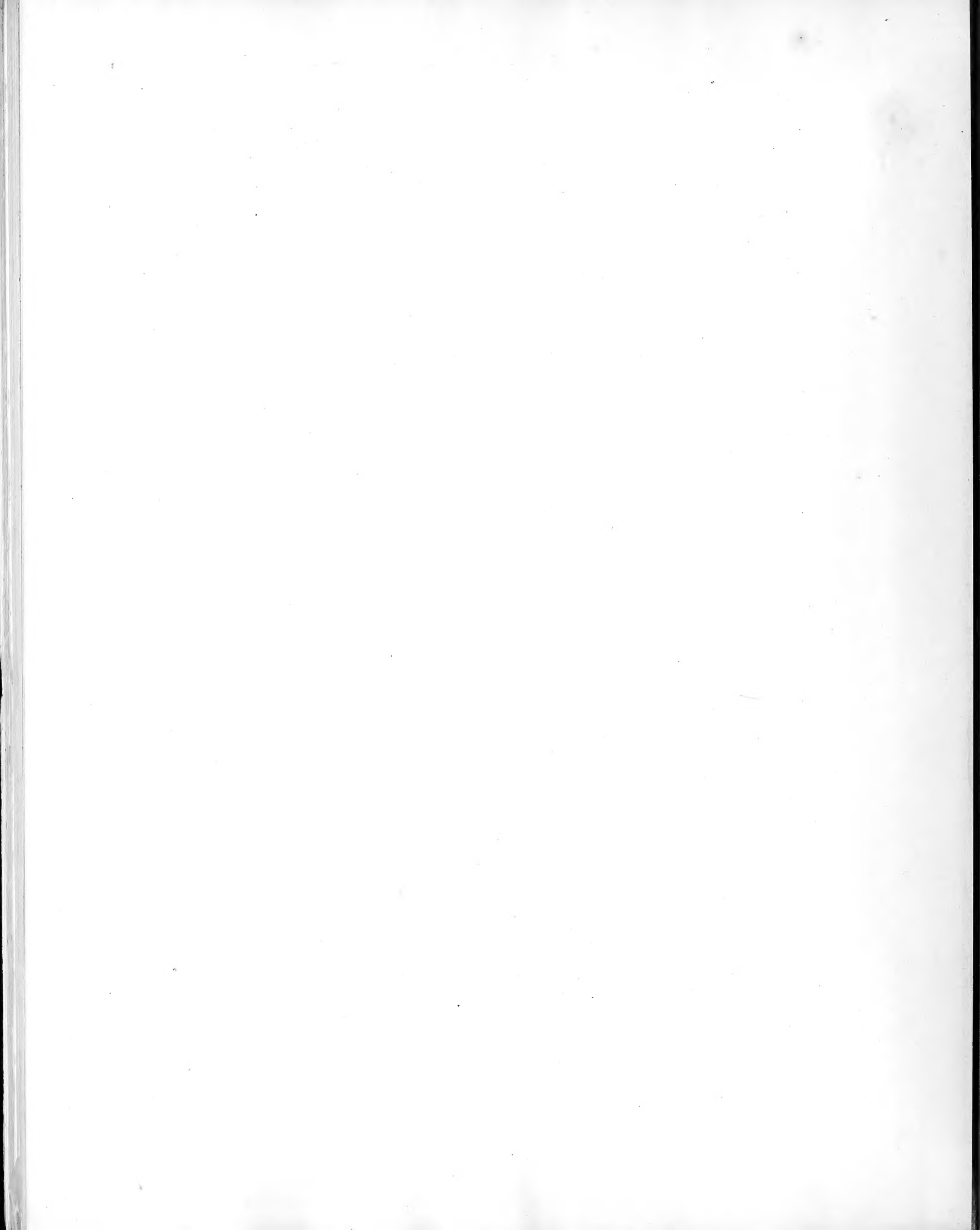
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